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IN THE

Supreme Court of the United States

October Term, 1965
No. 366

McCULLOUGH TOOL COMPANY, *et al.*,

Petitioner,

vs.

WELL SURVEYS, INCORPORATED, *et al.*,

Respondent.

Appendix to Petition for a Writ of Certiorari to the United States Court of Appeals for the Tenth Circuit.

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APPENDIX.

Opinion of the United States Court of Appeals for the Tenth Circuit.

United States Court of Appeals, Tenth Circuit, January Term, 1965.

Number 6952

McCullough Tool Company, Robert W. Pringle, Kenneth I. Roulston, George M. Brownell and Philip W. Martin, Appellants, v. Well Surveys, Inc., and Dresser Industries, Inc., a Corporation, Appellees.

Number 6953

McCullough Tool Company, Appellant, v. Well Surveys, Inc., Appellee.

Number 6954

Well Surveys, Inc., and Dresser Industries, Inc., Appellants, v. McCullough Tool Company, Robert W. Pringle, Kenneth I. Roulston, George M. Brownell and Philip W. Martin, Appellees.

Number 6955

Well Surveys, Inc., Appellant, v. McCullough Tool Company, Appellee.

Number 6956

Well Surveys, Inc., and Dresser Industries, Inc., Appellants, v. McCullough Tool Company, Robert W. Pringle, Kenneth I. Roulston, George M. Brownell and Philip W. Martin, Appellees.

Filed Mar. 17, 1965.

Appeals from the United States District Court, for the Northern District of Oklahoma.

R. Welton Whann, Richard B. McDermott and Edwin A. Oser (Robert M. McManigal and James E. Harrington on the briefs) for McCullough Tool Company, Robert W. Pringle, Kenneth I. Roulston, George M. Brownell and Philip W. Martin.

Robert W. Fulwider and Rufus S. Day, Jr., (Farmer, Woolsey, Flippo & Bailey; Fulwider, Patton, Rieber & Utecht; McAfee, Hanning, Newcomer, Hazlett & Wheeler; Anderson, Luedeka, Fitch, Even & Tabin on the briefs) for Well Surveys, Inc., and Dresser Industries, Inc.

Before Murrah, Chief Judge, Breitenstein and Hill, United States Circuit Judges.

Hill, Circuit Judge.

The appeals and cross-appeals in these consolidated cases involve the validity, infringement and misuse, together with the purge of such misuse, of three patents[1] owned by Well Surveys, Inc. (hereinafter referred to as WSI), and the validity and infringement of one patent[2] owned by Robert W. Pringle, Kenneth I. Roulston, George M. Brownell and Philip W. Martin, which is subject to an exclusive license in favor of McCullough Tool Company. For convenience we will hereinafter refer to all of the latter parties as McCullough. The first case was filed by WSI in the Southern District of Texas and thereafter transferred to the Northern District of Oklahoma. In this suit, WSI charged McCullough Tool Company with infringement of the

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[1]The three patents are: Patent No. Re. 23,226 (hereinafter referred to as the Bender Reissue Patent); Patent 2,308,361 (hereinafter referred to as the Fearon Patent); Patent No. 2,554,844 (hereinafter referred to as the Swift Patent).

[2]This patent is Patent No. 2,686,266 (hereinafter referred to as the Pringle Patent).

Bender Reissue, Fearon and Swift patents. McCullough Tool Company answered denying infringement and asserting the usual defenses of invalidity, lack of invention and misrepresentation by the patentees to the Patent Office and defects in the issuance of the Bender Reissue Patent as well as misuse of all three of the patents. In the second case, commenced in the court below by McCullough Tool Company, it alleged that WSI misused the three patents and sought a declaratory judgment of unenforceability, invalidity and non-infringement of such patents. By subsequent amendments to the complaint: Lane-Wells Company was made a party defendant and it and WSI were charged with infringement of the Pringle Patent; Pringle, Roulston, Brownell and Martin were made parties plaintiff; and Dresser Industries, Inc., was substituted for Lane-Wells.

The lower court consolidated the two cases for trial and, after making extensive findings of fact and conclusions of law reported at 199 F. Supp. 374, entered judgment in accordance therewith. In Case Nos. 6952 and 6953, McCullough appeals from those portions of the judgment holding: (1) The Bender Reissue, Fearon and Swift patents to be valid and infringed; (2) the Pringle patent to be valid only when limited to a certain apparatus and, as limited, non-infringed; (3) that WSI had not misused its patents after June 1, 1956, but had purged itself as of that date and was entitled to enforce its patents against infringement subsequent thereto; and (4) denying their motion for a new trial. The appeals and cross-appeals in Case Nos. 6954, 6955 and 6956 by WSI and Dresser are from those portions of the judgment holding: (1) The Pringle patent to be valid even as limited; and (2) WSI had misused its valid patents from June 11, 1940, to June 1, 1956.

The subject matter of the patents in suit relate to a method and apparatus for the logging of oil wells. Radioactivity well logging is the only method for logging an oil well through the casing and the first commercial logging services were offered to the oil industry by WSI and Lane-Wells. The term "radioactivity well logging" was originally applied to methods of detecting and measuring radiation naturally emitted by the formations of the earth around an oil well, but it soon became a generic term and is now used to designate any well logging in which radiations coming from the formations, whether natural or artifically produced, are detected and measured. There are various types of radioactivity well logging, including gamma ray logging and neutron logging.

We will first consider the validity of the patents in suit and will follow the rule that the findings of the Patent Office, especially when confirmed by the District Court, as they are here, will not be overturned by this court unless clearly infected with error. Johns-Manville Corporation v. Ladd, D.C. Cir., 328 F.2d 563. In this Circuit the better practice is to first consider the issue of the validity of a patent and then the issue of infringement. Sears, Roebuck & Co. v. Jones, 10 Cir., 308 F.2d 705, cert. denied, 371 U.S. 952.

Bender Reissue Patent.

The Bender Reissue Patent is for a "Subsurface Prospecting Device". It was issued to Lane-Wells on October 18, 1938, as Patent No. 2,133,776. The application and patent states that the invention disclosed therein "* * * relates to a sub-surface prospecting device which may be employed to detect the location of radio-

active formations and particularly where such formations have been penetrated by a well bore so that the instrument may be passed through the formation and in this manner detect the presence of the formation." The objects of the invention, as stated in the patent, are to: (1) Locate petroleum sands and other radioactive materials by means of detecting the location of secondary emissions therefrom; (2) detect the presence of petroleum sands outside of a well casing in which the instrument is being operated; and (3) lower a radiant energy detecting device into a bore well so that the radiant energy may be recorded at the surface and thereby establish the type of material at a particular depth.

The application for reissuance was filed on October 4, 1940, and it was issued on May 9, 1950, as Patent No. Re. 23,226 to Lane-Wells, which subsequently assigned it to WSI. The stated reason for seeking the reissuance was to obtain new claims 14-21, which cover a subject matter alleged to have been disclosed but not claimed in the original patent. In this connection, the record shows that, while thirteen claims were allowed in the original patent, two claims, 7 and 8,[3] were contained in the original application but were cancelled on July 20, 1938. The new claims, 14 through 21, were identical with certain counts of interference then pend-

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[3]They read as follows:

"7. A method of detecting the presence of radio active formations in well bores comprising the steps of lowering an electronic pickup device into the well bore and detecting the electronic bombardment of the device by such formation.

"8. A method of detecting the presence of radio active formations in well bores comprising the steps of lowering an electronic pickup device into the well bore, detecting the electronic bombardment of the device by such formation and indicating the saturation of such formation by the volume of bombardment detected."

ing in the Patent Office. Bender became a party to that proceeding and ultimately prevailed with the Patent Office holding that the original application disclosed and supported the material covered by the new claims in the reissue application. The record also shows that the two drawings of the Bender device contained in the original application and patent remain unchanged in the reissue patent.

The claims in issue relate to a method and apparatus for measuring radiations emanating from earth formations traversed by a bore hole and thereby to produce a radioactivity log of such subsurface formations. This invention teaches what is known as natural gamma ray logging and involves detecting and measuring the natural radioactivity of formations outside of and around the well casing. It utilizes the fact that earth formations exhibit natural gamma ray activity to a greater or lesser degree depending upon the type of formation, i.e., for example, shales and clays contain larger amounts of gamma ray emitting materials than do sandstones or limestones. The device used for detecting and measuring the gamma rays may be described as a radiation detector, i.e., Geiger counter, which is contained within a housing or lead cylinder that is lowered into the well by means of a cable. As the cylinder is lowered within the well casing, the radioactive signals produced by the earth formation outside of the well casing are detected by the Geiger counter and transmitted through a conductor located within the cable to the surface where, by means of a mechanical device, they are recorded in correlation with depth to produce an oil well log. This log gives information concerning the lithology of the subsurface formations.

McCullough first contends that this Patent is invalid because the invention disclosed in the reissue claims in suit is wholly different from that intended to be covered by, or disclosed in, the original patent. A reissue patent, to be valid, must be for the same invention as the original patent. The original and reissue patents are for the same invention where the latter fully describes and claims the very invention intended to be secured by the original patent and describes and claims only those things which were embraced in that invention and where it is not merely suggested in the original but constitutes a part or portion of that invention. The required intention does not appear if the additional matter covered by the reissue is not disclosed in the original patent. It is not enough that an invention might have been claimed in the original patent because it was suggested or indicated in the specification. U. S. Industrial Chemicals v. Carbide and Carbon Chemicals Corp., 315 U.S. 668; Leishman v. Associated Wholesale Electric Co., 9 Cir. 137 F.2d 722, cert. denied, 320 U.S. 794. The entire disclosure of the original patent, not just the claims, must be considered in determining what the patentee intended to claim and what invention the patent discloses. Application of Handel, C.C.P.A., 312 F.2d 943.

Considering the entire disclosure of the original Bender patent, we agree with the trial court's findings that the subject matter of the reissue claims in suit was "explicitly disclosed and taught but was not claimed" in the original patent and the "invention covered by said reissue claims in issue is the same invention as disclosed by the original patent." (199 F. Supp. at 380) It clearly appears from the face of the original patent

that what is covered in the reissue was disclosed and intended to have been covered and secured by the original patent. Claims 7 and 8 in the original application are broad enough to include the basic concept of the reissue claims and the objects of the invention, as set forth in the original application, certainly disclose the subject matter contained in the reissue claims.

McCullough's next contention is that, if the original application and patent were intended to cover and disclose the subject matter of the reissue claims, there was an intentional cancellation of the claims directed thereto, i.e., claims 7 and 8, and therefore the subject matter of those claims may not be recaptured in a reissue patent. A reissue patent is void if the matter covered by the reissue claims was intentionally omitted or abandoned by the patentee during the course of his application for the original patent or, in other words, in a situation where no error through inadvertence, accident or mistake exists. Altoona Publix Theatres v. American Tri-Ergon Corp., 294 U.S. 477; Dobson v. Lees, 137 U.S. 258. But this very same question was raised in the interference proceeding in the Patent Office and again by the Patent Examiner in the course of the ex parte proceedings on the reissue application. In both instances the ruling was in favor of Bender. Under these circumstances, we are bound by the rule laid down in Topliff v. Topliff, 145 U.S. 156, 171, that "* * * this court will not review the decision of the commissioner upon the question of inadvertence, accident, or mistake, unless the matter is manifest from the record * * *." Moreover, the lower court found there was no evidence that Bender either approved or authorized the cancellation of original claims 7 and 8 and the defenses

of lack of inadvertence, accident or mistake were not supported by any probative evidence. (199 F. Supp. at 380-381) We are also bound by these findings of fact unless they are clearly erroneous. Maytag Company v. Murray Corporation of America, 6 Cir., 318 F.2d 79; Noe v. Smith, 5 Cir., 300 F.2d 430. The record in the case clearly supports the findings of both the Patent Office and the trial court.

Lastly, McCullough contends that the Bender Reissue Patent is invalid over the prior art and relies upon the disclosures made in the Ambronn textbook. The Ambronn publication was considered by the Patent Office and, as the trial court found, it neither discloses nor teaches the use of a Geiger counter or any other type of radiation detector which produces an electrical signal. It discloses only the use of an electroscope, which provides an optical indication and is not suitable for use in radioactivity well logging.

The ultimate question of the validity of a patent is, of course, one of law for the court to decide. Mott Corporation v. Sunflower Industries, Inc., 10 Cir., 314 F.2d 872. We agree with the trial court that the Bender Reissue Patent is valid.

Fearon Patent.

The Fearon Patent is for a "Well Logging Method and Device" and the claimed invention relates to "* * * a method of and apparatus for conducting investigations inside of bore or drill holes * * * and renders it possible to identify and locate various formations traversed by such holes * * *." It was issued to WSI on January 12, 1943. The claims in issue describe a process and apparatus for exploring formations traversed by

cased drill holes and for investigating the physical properties of such formations to thereby determine the depths at which the valuable or oil bearing strata are located and at which the casing should be perforated in order to produce oil or gas. The asserted inventive feature of this patent is the providing of a source of neutrons for the purpose of bombarding the formations outside of and around the well casing and thereby determining from the resulting radiation reactions whether a particular formation, which could contain fluid such as oil or water, does contain any such fluid. Thus, Fearon teaches the lowering of a source of neutrons into a well and an apparatus for utilizing the neutrons so produced to bombard the formations surrounding the well and for measuring the resulting radiations passing from the formation to the subsurface tool.

The Fearon instrument is a housing or cylinder which is lowered into the well by a cable. Inside the housing or cylinder is an ionization chamber, which is connected to a circuit that contains an amplifier and conductors and leads to the surface of the ground. A quantity of radioactive material which, in one of its forms, emits neutrons is located below the ionization chamber. The ionization chamber contains a cylindrical outer electrode and a central wire electrode. It is filled with an inert gas, such as nitrogen, and the gas is under pressure. As the tool is lowered inside the well casing, the radioactive material bombards the casing and the surrounding earth formations with neutrons. This causes a radiation reaction in the earth formations and the radiation reactions are detected by the ionization chamber. The signals so detected are transmitted to the surface where, by means of a mechanical device, a recording or log is

made in correlation with the depth. The ionization chamber produces a continuous electrical current rather than pulses and the continuous current is a measure of the average energy flux impinging on the chamber.

McCullough contends that this patent is invalid over the prior art, i.e., Bender, because the only difference between the two is the substitution of a neutron source of radiation in Fearon for the X-ray or gamma ray source of Bender. The argument is that both sources were well known in the art and, hence, no invention could be claimed for such a substitution. It is based upon the well-recognized doctrine that the mere substitution of equivalents which do substantially the same thing in the same way, even though better results may be produced, is not such an invention as will sustain a patent. Dow Chemical Company v. Halliburton Oil Well Cementing Company, 324 U.S. 320. The question of equivalency is one of fact and it must be determined against the context of the patent, the prior art and the particular circumstances of the case and consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients and the function it is intended to perform. Graver Tank Co. v. Linde Air Products Co., 339 U.S. 605, 609; Application of Ruff, 45 C.C.P.A. 1037, 256 F.2d 590.

The lower court found and the evidence confirms: While the well logs are substantially the same regardless of whether the radiation detector used is a Geiger counter, an ionization chamber or a scintillation counter, still the gamma ray log of Bender and the neutron log of Fearon are quite dissimilar in that a gamma ray log generally indicates formation density and a neutron log

indicates porosity of the formation; the neutron log is a new and useful result never before obtained prior to Fearon; and there was an urgent need for a log which would complement Bender by giving an indication as to porosity and possible oil content of the inaccessible subsurface formations. The lower court concluded that the Fearon claims in issue were not obvious, but were the result of invention and were not anticipated by, but displayed substantial inventive advance over the prior art. (199 F. Supp. 381-383, 397) We are bound by those findings on the factual issues and agree with the court's conclusions. Accordingly, we hold that the Fearon Patent is valid.

Swift Patent.

This patent is entitled "Casing Collar Locator" and the invention "* * * relates to the art of well logging and more especially to apparatus adapted to simultaneously log a well and record the position relative to the well log of markers fixed along the depth of the well bore." The patent was issued to WSI on May 29, 1951. It recites that the usual method of determining depth by measuring, at the surface, the amount of cable lowered into the well was inaccurate for various reasons, including cable stretch; but that accurate indications of depth could be obtained " * * * if the well surveying device is so constructed that it not only performs the usual well surveying function, but also generates an appropriate signal each time that it passes one of a series of markers already placed at fixed depths in the well. Such markers are preferably the junctions between the sections of the well casing. * * *" It also recites that "* * * if a magnetic field is created in the well bore and caused to be

of such a configuration as to extend into the surrounding casing, and this field is lowered down the well bore, it will remain substantially unchanged except when it passes a junction between two casing sections * * *" and the signal which results from the change as a junction is passed "* * * may then be used to determine or calibrate the depth scale against which the primary measurements are recorded."

The claims in issue describe a method and apparatus for simultaneously identifying and measuring the radiation signals emanating from the earth formations surrounding the well casing and obtaining signals indicating that the tool has passed a casing junction or collar. The signals are then combined and transmitted to the surface where they are recorded to provide a log in which the radiation measurements are accurately correlated with depth. Thus, the Swift patent discloses a combination of a radiation detecting system with a "casing collar locator" in which the radiation signals and casing collar signals are electrically combined and subsequently recorded on a log to indicate the type of earth formation that may be present at a particular depth in the well as indicated by the location of the casing collars. The resulting log is essentially different from, and more accurate than, a radiation log wherein depths are determined by measurements made at the surface. The casing collar locator utilizes a magnetic field, the configuration of which is broken or changed when the locator passes a casing collar thereby producing the casing collar signals.

The lower court found and determined that: The problem of accurate depth measurements in radioactivity well logging was "* * * first solved for cased

wells by the invention of the Swift Patent which met with immediate and substantial commercial success"; the casing collar signals made by the Swift method and apparatus at the time and place of the radiation measurements are primary depth measurements, the use of which produces a log essentially different from a radiation log where depth measurements are determined by secondary measurements made at the surface; the Swift Patent is a new combination of elements which produces a new and useful result and is not a mere aggregation of elements; and the Swift device is of great utility and value, it was not obvious but is the result of invention and it is not anticipated by, but displays substantial inventive advance over, the prior art. (199 F. Supp. at 385-387)

McCullough directly attacks these findings as being manifestly erroneous and asserts that the problem of accuracy of depth measurements had already been solved and was disclosed in the prior art at the time Swift's application was filed. It is argued that Swift is invalid over the prior art[4] because (a) casing collar locators and radioactivity formation logging are old and had been disclosed in the prior art relied upon and Swift does not amount to a new combination of these elements

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[4]The prior art relied upon by McCullough is the following: The Lane-Wells "feeler" type of collar locator; the Russell Patent, No. 2,320,890, issued June 1, 1943; the Ennis Patent, No. 2,228,623, issued January 14, 1941; the Doll Patent, No. 2,476,137, issued July 12, 1949; the Castel Patent, No. 2,459,499, issued January 18, 1949; prior public use by Schlumberger of a "locating radioactive marker"; and the Stratagraph electric logging device. However, the Russell Patent, while attached as an exhibit to the complaint, was not introduced into evidence and is not a part of the printed record. It is therefore not properly before us and will not be considered in our disposition of the cases. In any event, an examination of the patent shows that it is of little, or no, help to McCullough.

which produces a new and useful result, but rather is a mere aggregation and, as such, unpatentable, (b) it does not meet the standard of invention required for a patent, and (c) it does not possess the element of novelty. To demonstrate its argument, McCullough separates the elements of the disclosure and claims of the Swift patent, as set forth in the court's findings, and shows where each of those elements may be found or are disclosed in the prior knowledge or use, patents and printed publications that make up the prior art.

WSI does not deny that the individual elements are old in the art, but does argue that the combination covered by the Swift claims in issue is new and patentable. It argues that those claims may not be challenged by dissecting them and taking up the parts one at a time, but must be looked at as a whole and when this is done it becomes clear the trial court correctly found a new combination unknown in the prior art. It points out, and correctly so, that Swift was the first to utilize casing collar signals for the purpose of making primary depth measurements separately from, but at the same time and place as, radioactivity measurements as distinguished from secondary measurements made at the surface. It may fairly be stated that none of the items of prior art relied upon by McCullough, either individually or collectively, disclose such a method or apparatus. It is true that Ennis discloses a combination of a perforator gun and a magnetic casing collar locator but it does not show a combination of radioactivity well logging and casing collar locator. It is also true that the Schlumberger prior use discloses a casing collar locator and a Geiger counter but the collar locator is not magnetic and the Gieger counter is used

to locate a radioactive bullet placed in the well before it was cased rather than to detect radioactivity from the earth's formations. The Stratagraph uses a single detector as distinguished from the combination of a collar locator and a Geiger counter or ionization chamber and, as a result, it did not make a reliable log and never achieved any substantial commercial success or acceptance. Thus, while the prior art does disclose the two elements of casing collar locator and radioactivity well logging, it does not disclose any combination of those two elements so as to produce the result achieved by Swift, namely, the combining of a magnetic casing collar locator and radioactivity well logging and the providing of a transmitter system so that casing collar signals and radiation signals can be transmitted and recorded to show earth formation in correlation with depth.

It is universally held that a mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than previously performed or produced by them, is not a patentable invention. Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., 340 U.S. 147; Admiral Corporation v. Zenith Radio Corp., 10 Cir., 296 F.2d 708; Consolidated Electro. Corp. v. Midwestern Instruments, 10 Cir., 260 F.2d 811. The test of whether a particular patent is a mere aggregation and invalid or a combination and valid has been variously stated. Generally, where elements old in the art are united in such a way that a new and useful result is affected or an old result is attained in a more facile, economical and efficient manner, there is a patentable combination. Bewal, Inc. v. Minnesota Mining and Mfg.

Co., 10 Cir., 292 F.2d 159; Oliver United Filters v. Silver, 10 Cir., 206 F.2d 658, cert. denied, 346 U.S. 923.

We think the Swift patent is a combination, rather than an aggregation, of old elements. The record sustains the trial court's factual determination that Swift is a new combination of old elements that produces a new and useful result and was not obvious to one skilled in the art. The log produced by the Swift method and apparatus is not only different from, and more accurate than, a radiation log but it also utilizes a casing collar to record depth measurements simultaneously with the recording of radiation formation signals. This is a result that no other prior invention had ever reached. The fact that the Swift combination worked and gave an accurate depth measurement, while none of the prior devices had, is an indication of inventiveness. Twentier's Research, Inc. v. Hollister Incorporated, 9 Cir., 319 F.2d 898. We conclude that the patent in suit is a valid combination of elements old in the art and amounts to invention and that it possesses the requisite element of novelty under the test set forth in Mott Corporation v. Sunflower Industries, Inc., supra, 314 F.2d at 879.

McCullough next contends that the method and apparatus disclosed in Swift was in public use for more than a year prior to the filing of the application for patent and, therefore, it is invalid under 35 U.S.C.A. § 102(b). The device was first conceived in May, 1944, and the application for patent was not filed until March, 1946. Section 102(b) provides that a person shall not be entitled to a patent if his invention has been in public use for more than one year prior to the applica-

tion. Sears, Roebuck & Co. v. Jones, supra. A single public use is sufficient to render a patent invalid. Consolidated Fruit Jar Co. v. Wright, 94 U.S. 92. But not every use is a public use within the meaning of the statute. Hobbs v. Wisconsin Power & Light Company, 7 Cir., 250 F.2d 100, cert. denied, 356 U.S. 932. The good faith use of the device or apparatus for experimental purposes is not a public use within the intent and meaning of the statute. Merrill v. Builders Ornamental Iron Co., 10 Cir., 197 F.2d 16; Nicholson v. Carl W. Mullis Engineering and Mfg. Co., 4 Cir., 315 F.2d 532, cert. denied, 375 U.S. 828. During an experimental period, the inventor may freely use his device "* * * for the purpose of testing the machine * * *", Smith and Griggs Mfg. Co. v. Sprague, 123 U.S. 249, 256, or "* * * in order to bring the invention to perfection * * *", Elizabeth v. The American Nicholson Pavement Co., 97 U.S. 126, 134, and the statutory period does not commence to run.

Public use is defined as "* * * [t]he ordinary use of a machine or the practice of a process in a factory in the usual course of producing articles for commercial purposes * * *." Electric Storage Battery Co. v. Shimadzu, 307 U.S. 5, 20. The burden is upon the one asserting prior public use to establish it by clear, cogent and satisfactory proof to remove all reasonable doubt thereof; but when a use is shown that has occurred prior to the statutory period, it is incumbent upon the patentee to show that such use was experimental only. Merrill v. Builders Ornamental Iron Co., supra; Linville v. Milberger, 10 Cir., 34 F.2d 386. The issue of whether a use of the device is experimental or public is one of fact. Willamette-Hyster Co. v. Pacific Car & Foundry

Co., 9 Cir., 122 F.2d 492; General Electric Co. v. Minneapolis-Honeywell R. Co., 2 Cir., 118 F.2d 278. And, the trial court's finding in this respect is binding upon the Court of Appeals unless it is clearly erroneous. Webb v. Frisch, 7 Cir., 111 F.2d 887; Cold Metal Process Company v. Republic Steel Corp., 6 Cir., 233 F.2d 828, cert. denied, 352 U.S. 891.

The trial court found that all uses made of the invention prior to the date the application was filed were experimental, were carried on in good faith for such purposes and were not prior public uses of the invention. (199 F. Supp. at 396-397) It is sufficient here to say we agree with the trial court that the repeated references, as disclosed in the documentary evidence and made during the period from 1944 to March, 1945, to the tool as being experimental in character "should be accorded great weight" in determining whether the use was experimental and carried on in good faith. The initial tests were commenced in 1944 and carried on until March 9, 1945, with regular reports being submitted during that time. These reports show various changes were made in the tool from time to time. The design and circuitry of the casing collar locator were kept secret and the locator itself was encased in a housing and not shown to outsiders. This evidence supports the finding that the use of the tool was made in good faith for experimental purposes and that there was no prior public use of the tool for more than a year before the application.

McCullough's next contention is that Swift is invalid because it was obtained by fraud and misrepresentations to the Patent Office on the part of the patentee. This court has held that relief will be denied in a patent

infringement suit to a "* * * patentee who has behaved unethically in his dealings with the Patent Office in connection with a patent in suit. * * *" Admiral Corporation v. Zenith Radio Corp., supra, 296 F.2d at 716. McCullough had the burden of proving fraud by clear and convincing evidence. Armour & Co. v. Wilson & Co., 7 Cir., 274 F.2d 143; Triumph Hosiery Mills, Inc. v. Alamance Industries, Inc., 4 Cir., 299 F.2d 793, cert. denied, 370 U.S. 924. It has not met that burden in this case. The record shows that the alleged misrepresentations relied upon by McCullough were not, in fact, misrepresentations at all and that there was no concealment of pertinent prior art.

McCullough's remaining contentions that the patent in suit is invalid because the descriptions and drawings contained therein are fatally defective under 35 U.S.C.A. § 112 and because it is based upon alleged new matter, as disclosed in a drawing designated as Figure 4, in violation of 35 U.S.C.A. § 132, are also without merit. Section 112 provides that the patent "* * * specification shall contain a written description of the invention, and of the manner and process of making and using it * * *"; but it does not require a description of all variations that might suggest themselves to one versed in the art. Sears, Roebuck & Co. v. Jones, supra. The invention may be described together with that mode which is conceived to be the best for putting it into practical use and where that has been done the patent is not confined to the precise mode outlined. Chicago Pneumatic Tool Co. v. Hughes Tool Co., 10 Cir., 97 F. 2d 945, 946, cert. denied, 305 U.S. 643; Pursche v. Atlas Scraper and Engineering Co., 9 Cir., 300 F.2d 467, cert. denied, 371 U.S. 911. The patent in suit clear-

ly meets this test and it is obvious from an examination of the file wrapper that the original application contains a description of everything disclosed in Figure 4.

We have no difficulty in concluding that the Swift Patent is valid in all respects.

Pringle Patent.

This patent was issued on August 10, 1954, and is entitled "Improvements in Radiation Detectors". Among others, the objects of the invention are to provide: (1) "* * * [A] device * * * which, due to the capacity thereof to record energies of gamma rays, makes it particularly suitable for use in the identification of radioactive minerals, liquids, gases and other substances."; (2) "* * * a scintillation spectrometer particularly suitable for use in bore holes whereby continuous records of the intensities and energies of the naturally occurring and neutron capture gamma rays may be obtained, which permits a determination to be made of the location and nature of firstly, naturally occurring radioactivity, and secondly the physical and chemical structure of the strata. * * *"; and (3) a device which includes a "* * * flip-flop circuit for operating a counting-rate meter. * * *" By use of this circuit, pulses of less than any desired amplitude may be discriminated against and rejected. It is possible to determine the size distribution of the pulses due to scintillations and, hence, the energies of the gamma rays involved. The record shows that the claims as set forth in the original application were rejected on the ground that they were unpatentable over the prior art. In response to such rejection, the applicants amended their

application by, among other things, adding the following: "* * * it is necessary to use a single crystal having a mass not less than 10 grams in order to measure most accurately the energies of the gamma rays." They were successful in their arguments and the patent was duly issued.

The claims in issue describe a specialized form of radioactivity well logging, known as "spectral logging", in which the energies of gamma rays emanating from the earth's formations are measued to identify the type of formation found at a particular depth and in which a discriminator is used to separate out and reject signals derived from gamma rays having less than specified energies. The gamma rays are detected and their energies measured by a scintillation counter, which is located in the lower part of the housing that is lowered into the well by a cable and which has three basic elements: A phosphor which emits brief flashes of light, i.e., scintillations, when exposed to radiation; a photo-sensitive element, i.e., photo-multiplying tube, to receive the scintillations and convert them into electronic pulses; and an indicator means, usually in the form of a counting rate meter, that is connected to the photo-sensitive element and used to receive and send on the pulses or characteristics of the gamma rays.

The phosphor in this patent is a single unit crystal, having a mass of at least 10 grams, and is made of sodium iodide activated by thallium. It must be protected from the effect of moisture in the atmosphere and this is accomplished by covering it with a protective shield, which also serves the purpose of reflecting any light emerging from parts of the crystal not adjacent to the photo-sensitive element back towards the

end of that element. The crystal scintillates or emits flashes of light as a result of its absorbing the energy of gamma rays when it is subjected to radiation bombardment. Each of the gamma rays detected by the crystal causes a separate scintillation and they are of different energies depending upon the elements of the formation from which they originate. For example, the energy of the gamma rays emitted by thorium is different from that of gamma rays produced by uranium and since each element, such as uranium or thorium, has its own particular gamma ray energy, it can be identified by measuring the energy of the gamma ray detected by the crystal. In addition to detecting the gamma rays, the crystal also converts them into light flashes of proportional energy, which are then received by the photo-sensitive element.

The photo-sensitive element is a photo-multiplying tube which, as it receives the scintillations or light flashes, converts each of them into an electronic or voltage pulse. This pulse has a height or voltage in direct portion to the light flash or scintillation and, thus, is proportional to the amount of energy contained by the original gamma ray. The electronic pulses then flow through an electric circuit to an amplifier, contained in the tube, where each of the electronic pulses is proportionally increased in voltage so that it may flow through an electric circuit located inside of the cable used to lower the tool into the well and, thus, to the surface of the ground. At the surface, the pulses pass through an amplifier, a discriminator and a counting rate meter and are then recorded in the form of a log.

The indicator means is a counting-rate meter and its function is to separately count the electronic pulses of

each size. An essential part of the indicator is a discriminator which acts as a threshold device or gate to screen out and reject spurious pulses generated by such things as noise in the photo-multiplying tube and elsewhere in the counter. By its use, pulses of less than any desired height or amplitude are eliminated and only those of a predetermined amplitude are passed and ultimately recorded. In other words, the function of the discriminator is to separate out all voltage plulses below a preselected energy level and reject them while at the same time allowing all pulses above that level to pass on for recording. There are two kinds of discriminators pertinent to this patent. An integral discriminator passes all electronic pulses larger than a predetermined level and screens out the rest. A differential discriminator is comprised of two integral discriminators so arranged as to select all electronic pulses larger than a first predetermined level and smaller than a second similar level or, stated in another way, it selects and permits the counting of electronic pulses within a certain band.

The McCullough tool, manufactured under this patent by exclusive license, therefore contains a scintillation counter, rather than a Geiger counter or ionization chamber, and also a casing collar locator to establish depth. It functions in this way: As the tool is lowered into the well, the gamma rays emitted from the particular earth formation present are detected by the crystal and converted into light flashes or scintillations; the scintillations are received by the photo-multiplier and converted into electronic pulses; the electronic pulses are amplified and sent out through an electronic circuit to a discriminator where they are rejected or passed through; and the electronic pulses passed through are

recorded to form a log of the formations encountered. The composition of the formation at any designated depth can be determined because the gamma rays emitted by the type of material in the formation contain or possess a certain energy which is measured by the crystal and kept uniform throughout the ensuing process until recorded. Unlike the tool described in Swift, which has only one recording means to record signals originating in a single formation recorder, the McCullough tool sends two separate sets of signals to the surface where they are recorded on two recorders. This is because there is one set of signals for the casing collar locator that is sent through one circuit and another set of signals from the formation detector that is sent through another circuit.

The asserted inventive feature of the patent in suit is an alleged new combination of elements having a new mode of operation, which is said to be unique in the following respects: It is the first device to accomplish the identification of chemical elements contained in bulk material such as earth formations so that the presence of different unknown chemical elements can be detected; it is the first to identify chemical elements in bulk material by measuring the precise energies of the gamma rays emitted therefrom and discarding undesirable gamma ray energies which interfere with effieient and effective determinations; and it is the first to conceive and develop a single, thallium activated, sodium iodide crystal which is transparent to its own scintillations and of sufficient size to completely absorb the energy of detected gamma rays.

The trial court concluded that the claims in issue are valid but "* * * are limited to scintillation counter apparatus for the determination of energy characteristics of gamma rays by analyzing the pulses generated by the gamma rays to determine energy characteristics either by variation of an integral discriminator setting or by use of a differential discriminator." (199 F. Supp. at 388) Both parties have appealed from this determination. McCullough claims that its tool manufactured in accordance with the patent under an exclusive license is a new combination of elements and produces a new result never before attained and therefore the claims are valid in their entirety. Since the argument in this respect furnishes the basis for McCullough's claim of infringement, it will be more convenient to discuss it in connection with that issue.

WSI contends that the Pringle Patent is invalid, even when the claims in issue are limited to a scintillation spectrometer, because it lacks novelty and invention over the prior art. It asserts that everything covered by Pringle was known and published in the art before the patentees made their alleged invention. In the court below WSI relied upon a total of 165 references consisting of 47 prior patents and 118 technical articles or publications. However, in connection with this appeal it apparently relies upon only two of the patents[5] and several of the printed publications.[6] None of these publica-

[5]They are Patent No. Re. 24,226 (hereinafter referred to as the Fearon Reissue Patent) and Patent No. 2,549,176 (hereinafter referred to as the Crumrine Patent).

[6]They are the following articles published on the dates indicated: Deutsch - December 1, 1947; Moon - May 15, 1948; Bell - June 1, 1948; Hofstadter - July 1, 1948 and July 22, 1948; Morton and Mitchell - December, 1948; and the Oak Ridge Symposium - October, 1949 and October 21,1949.

tions were cited by the Patent Office and each and every one of them deals with scintillation counters in one way or another. All of such publications are reports on laboratory experiments which were not conducted with a view to producing an instrument suitable for logging an oil well by measuring energies of gamma rays to determine the type of formation producing them. In short, none of the prior art references, including the patents, are concerned with the problem of identifying chemical elements mixed in bulk, such as formations of the earth, by measuring the energies of gamma rays emitted therefrom. Nor do any of them teach the using of a scintillation counter combined with a discriminator, for measuring not only the intensities of gamma rays but also their energies and the rejection of pulses above or below a predetermined level so as to provide a means of geophysical exploration and the making of neutron or radioactivity well logs.

We must first determine whether the claimed invention lacks the element of novelty or is anticipated by the prior patents and printed publications. In this connection, this court has held that the burden is upon the one asserting anticipation to sustain it by clear and convincing evidence and a patent is to be measured as anticipatory, not by what might be made out of it, but by what it clearly and definitely discloses. Mott Corporation v. Sunflower Industries, Inc., supra. In order for a prior patent to anticipate an invention, it is necessary that all of the elements of the invention or their equivalents be found in one single structure or description, where they do substantially the same work in substantially the same way. Preformed Line Products Co. v. Fanner Mfg. Co., 6 Cir., 328 F.2d 265, cert.

denied, ...U.S. ...., 13 L. Ed. 2d 51. In order for a prior printed publication to anticipate an invention the description contained therein must disclose the complete and operative invention in such full, clear and exact terms as to enable any person skilled in the art to which it pertains to practice the invention to the same extent as he would be enabled to do if the information were derived from a prior patent. Eames v. Andrews, 122 U.S. 40; 40 Am. Jur., Patents, § 37, p. 554. In short, a printed publication is to be tested by the same rules as those applicable to a prior patent. 69 C.J.S., Patents, § 41, p. 232. Anticipation is strictly a technical defense and unless all of the same elements are found in exactly the same situation and united in the same way to perform an identical function, there is no anticipation. National Lead Company v. Western Lead Products Company, 9 Cir., 324 F.2d 539; Stauffer v. Slenderella Systems of California, 9 Cir., 254 F.2d 127.

It is clear that the prior patents and publications relied upon by WSI do not meet the standards required of them to constitute anticipation. No single patent or publication comes anywhere near to a disclosure of the elements of the Pringle Patent. None of them contain a description in "such full, clear and exact terms as to enable any person skilled in the art to which it pertains to practice the invention to the same extent as he would be enabled to do if the information were derived from a prior patent." The very fact that WSI found it necessary to rely upon 165 prior references is in itself an indication of the weakness of the claim that Pringle is lacking in novelty. See Reynolds v. Whitin Mach. Works, 4 Cir., 167 F.2d 78, 83, 84, cert. denied, 334 U.S. 844.

It is suggested, however, that Pringle is nothing more than an aggregation of elements old in the art and as such it comes within the rules of Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., supra. Of course, to establish anticipation in such a situation, it is not necessary that all of the elements be found in a single patent or publication. It is enough if the whole of the prior art considered together discloses all of the claimed elements and that no new functional relationship arises from their combination. Doran Coffee Roasting Co. v. Wyott Manufacturing Co., 10 Cir., 267 F.2d 200; Hollywood-Maxwell Co. v. Street's of Tulsa, 10 Cir., 183 F.2d 261. In order to anticipate a patent for a combination, the prior art must disclose all of the elements of such combination or their mechanical equivalents, functioning in substantially the same way to produce substantially the same result. Williams Iron Works Co. v. Hughes Tool Co., 10 Cir., 109 F.2d 500. Rudimentary or unsuccessful experiments with isolated elements of a combination do not anticipate an invention which successfully combines those elements. Smith v. Snow, 294 U.S. 1; Stearns v. Tinker & Rasor, 9 Cir., 220 F.2d 49, cert. denied, 350 U.S. 830; G. H. Packwood Mfg. Co. v. St. Louis Janitor Supply Co., 8 Cir., 115 F.2d 958. And, "* * * whoever finally perfects and improves a device and renders it capable of practical, useful and effective operation is entitled to a patent although others had the idea and made experiments toward putting it into practice. * * *" Montgomery Ward & Co. v. Clair, 8 Cir., 123 F. 2d 878, 881.

These rules are controlling here. The prior printed publications were all concerned with experiments which,

if they were not rudimentary or unsuccessful experiments of isolated elements of the combination disclosed in Pringle, certainly did not perfect and improve the device embodied in Pringle or its equivalent or render it capable of practical, useful and effective operation. Thus, the prior art, considered together as a whole, does not anticipate the Pringle Patent, which did put the idea into practice. Pringle must therefore be considered to be a valid combination unless, as WSI asserts, it would have been obvious to a person having ordinary skill in the art.

The general rule is that before a device may be patentable, the improvement over the prior art must involve more than would be obvious to one of ordinary skill in the art. Admiral Corporation v. Zenith Radio Corp., supra; Philip Sitton Septic Tank Company v. Honer, 10 Cir., 274 F.2d 811; E. J. Brooks Company v. Stoffel Seals Corporation, 2 Cir., 266 F.2d 841, cert. denied, 361 U.S. 883. If those skilled in the art are working in a given field and have failed after repeated efforts to discover a particular new and useful improvement, the person who first makes the discovery does more than make the obvious improvement which would suggest itself to a mechanic skilled in the art, and is entitled to protection as an inventor. Bewal, Inc. v. Minnesota Mining and Mfg. Co., 10 Cir., 292 F.2d 159; Williams Iron Works Co. v. Hughes Tool Co., supra; Steiner Sales Co. v. Schwartz Sales Co., 10 Cir., 98 F.2d 999, cert. denied, 305 U.S. 662; G. H. Packwood Mfg. Co. v. St. Louis Janitor Supply Co., supra.

We think that, when measured by the foregoing rules, the Pringle device, as limited by the trial court, is not only novel but was not obvious and constitutes invention as well. The record indicates that numerous efforts were made to discover the new and useful improvement embodied in the Pringle Patent and that the Pringle device produced a log correlating porosity with depth which was far superior to any other on the market at that time. This result, we believe, constitutes more than the exercise of mere mechanical skill.

WSI's final contention is that if the 10 gram size of the crystal is critical, then claims 1, 2, 8, 13, 14, 20, 21 and 22 of the patent in suit are invalid because they are based upon "new matter" in contravention of 35 U.S.C.A. § 132 and if the crystal size is not critical, then such claims are invalid because they are based upon a mere change in degree or proportion in violation of the rule laid down in Powers-Kennedy Contracting Corp. v. Concrete M. & C. Co., 282 U.S. 175, 185, and other similar cases. Little need be said on this point. The complete answer to it is that it is not the size or weight of the crystal that contributes patentability to the claimed invention. It is the method and apparatus for analyzing the pulses generated by gamma rays to determine energy characteristics and the recording thereof either by variation of an integral discriminator or by use of a differential discriminator that makes this invention patentable. We are convinced that the patent in suit is valid when limited as specified by the trial court.

Infringement of Bender Reissue and Fearon Patents.

The questions of infringement with respect to the Bender Reissue and Fearon Patents are closely related and may be considered together. As to Bender, the trial court found: The natural gamma ray logging apparatus and method utilized by McCullough includes each and every step recited in the Bender claims in issue and includes each and every element of the Bender apparatus and method; each of the Bender claims in issue reads directly on the McCullough apparatus and method; McCullough accomplishes the same result in substantially the same way as Bender and is the full equivalent thereof; and therefore each of the Bender claims in issue was infringed by McCullough. (199 F. Supp. at page 379) The court made similar findings as to Fearon (199 F. Supp. at page 382) and in connection with both patents found: Geiger counters, ionization chambers and scintillation counters are all radiation detectors sensitive to gamma rays; they all accomplish the same result in substantially the same manner; they all detect radiation by producing electrical signals indicative thereof; it is a matter of choice as to which one of them is used; the resulting logs are substantially the same regardless of the type of detector used; the scintillation counter used by McCullough performs no different function than that performed by the Geiger counter of Bender in natural gamma ray logging or by the ionization chamber of Fearon in neutron logging, the modes of operation are the same and they are full equivalents; and the claims in issue of each patent are not limited to any specific type of radiation detector. (199 F. Supp. at pages 379-380 and pages 382-383) The court also found that while a scintillation counter may be used

to determine the energy spectrum of natural gamma rays or of radiations resulting from neutron bombardment, the energy spectrum principle was not utilized by McCullough in its conventional gamma ray or neutron logging operations. (199 F. Supp. at 380 and 383)

McCullough contends that these findings are erroneous and that the two patents in suit are not infringed because the apparatus and method used by it in each type of well logging equipment consists of a different combination of elements which has a different mode of operation and produces a different result. This contention is based upon the fact the McCullough apparatus and method uses a scintillation counter as a radiation detector, which is capable of measuring both intensity and energy of a gamma ray, whereas Bender uses a Geiger counter and Fearon uses an ionization chamber, neither of which is capable of measuring energy. As McCullough points out, Bender is comprised of a Geiger counter, an amplifier and a recorder. Fearon is made up of an ionization chamber, a direct current amplifier and a recording galvanometer. The McCullough tool consists of a sodium iodide crystal, a reflector shield, a photo-multiplying tube, a pulse lengthening circuit, a pulse amplifier, a discriminator and a counting-rate meter. As to mode of operation, a Geiger counter converts gamma rays directly into electronic pulses of the same size and all pulses are recorded. An ionization chamber converts gamma rays directly into a continuous current flow and only an average flow is recorded. A scintillation counter converts gamma rays into light flashes of proportional energy and the light flashes are in turn converted by the photo-multiplying tube into voltage pulses. It can be used so that only those voltage pulses

of a preselected energy are recorded. In results produced, only by using a scintillation counter can pulses proportional to the energies of gamma rays be rejected as being below or above a predetermined level and thus be excluded from the log. None of these pulses can be excluded where a Geiger counter or an ionization chamber is used. These are only a few of the asserted differences but they illustrate McCullough's argument.

However, it must be remembered that the Bender invention is an apparatus and method for natural gamma ray logging and not a Geiger counter. By the same token, the Fearon invention is not an ionization chamber but an apparatus and method for neutron logging. It must also be remembered that the court found that the energy measuring capability of the McCullough scintillation counter was not utilized by it in its conventional gamma ray and neutron logging operations. As a result, many of the obvious differences between Bender and Fearon, on the one hand, and McCullough, on the other, are not material here. The issue is whether the material differences are sufficient to preclude a finding of infringement.

The question of infringement is one of fact and, upon review, the trial court's findings thereon will not be set aside unless they are clearly erroneous. Stilz v. United States, 269 U.S. 144; Hahn & Clay v. A. O. Smith Corporation, 5 Cir., 320 F.2d 166, cert, denied, 375 U.S. 944. Therefore, our power of review is limited to determining whether, under correct legal standards, the findings of infringement are supported by the record.

In determining whether an accused device infringes a valid patent, resort must be had in the first instance

to the words of the claims contained in the patent and if the accused device falls clearly and definitively within those claims, infringement is made out. Graver Tank Co. v. Linde Air Products Co., supra; Parmelee Pharmaceutical Company v. Zink, 8 Cir., 285 F.2d 465; Maytag Company v. Murray Corporation of America, 6 Cir., 318 F.2d 79. However, this is not conclusive as infringement is not a mere matter of words. Pursche v. Atlas Scraper and Engineering Co., supra; Nickerson v. Bearfoot Sole Company, 6 Cir., 311 F.2d 858, cert. denied, 375 U.S. 815. The true test of infringement is whether the accused device and the device covered by the patent do the same work in substantially the same way to accomplish substantially the same result. Bewal, Inc. v. Minnesota Mining and Mfg. Co., supra; Jamco, Incorporated v. Carlson, 10 Cir., 274 F.2d 338; Jones v. Bodaness, 10 Cir., 189 F.2d 838; Williams Iron Works Co. v. Hughes Tool Co., supra.[1] Under the doctrine of equivalents, infringement may exist even though the two devices differ in name, form or shape. Graver Tank Co. v. Linde Air Products Co., supra. Equivalency must be determined against the context of the patent, the prior art and the particular circumstances of the case and complete identity for every purpose and in every respect is not required. Jones v. Bodaness, supra.

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[1]This court said in Merrill v. Builders Ornamental Iron Co., 10 Cir., 197 F.2d 16, 20:

"* * * Infringement exists only when the accused apparatus or device and the disclosure of the patent in suit are substantially identical in mode of operation and results accomplished. An apparatus or device does not infringe unless it incorporates in its structure and operation the substance of the patent and produces substantially the same effect in substantially the same way as that taught in the patent. * * *"

A primary or pioneer patent, such as Bender, is to be given a broad and liberal construction and, also, a broad and liberal range of equivalence and it is not to be limited to the precise device and instrumentality disclosed. Mason Corporation v. Halliburton, 10 Cir., 118 F.2d 729; Priebe & Sons Co. v. Hunt, 8 Cir., 188 F.2d 880, cert. dismissed, 342 U.S. 801. A combination patent which constitutes a marked improvement in the art, such as Fearon, is entitled to a substantial range of equivalents. Skinner Bros. Belting Co. v. Oil Well Improvements Co., 10 Cir., 54 F.2d 896; Johns-Manville Corporation v. National Tank Seal Co., 10 Cir., 49 F.2d 142, cert. denied, 284 U.S. 654. And, of course, every element of a combination patent is conclusively presumed to be essential and therefore every element, or its functional equivalent, must be found in the accused device or there is no infringement. Texas Co. v. Anderson-Prichard Refining Corporation, 10 Cir., 122 F.2d 829; Haynes Stellite Co. v. Osage Metal Co., 10 Cir., 110 F.2d 11.

Giving the two patents in suit the range of equivalents to which they are entitled, we think the accused McCullough devices not only read directly upon the Bender and Fearon claims, but they do the same work in substantially the same way to accomplish substantially the same result. It is true that there are differences in name, form and shape as between a Geiger counter, an ionization chamber and a scintillation counter. But, the energy measuring capability of the scintillation counter is not used in the accused devices and therefore all three of them do substantially the same thing, namely, measure the intensity of gamma ray radiations or neutrons. McCullough's own expert witness testified on

cross-examination that Geiger counters, ionization chambers and scintillation counters all measure gamma rays and that the one chosen to be used depends upon the particular problem at hand. It is also true that for some purposes the scintillation counter is superior to the other two and that it performs the additional functions of converting gamma rays into light flashes and providing pulses rather than a continuous flow. But infringement cannot be avoided by the mere fact that the accused device is more or less efficient or performs additional functions. Johns-Manville Corporation v. National Tank Seal Co., supra. It is clear from the record that insofar as conventional gamma ray and neutron logs are concerned, there is no significant difference between the logs regardless of which type of radiation detector is used to produce them. The accused McCullough apparatus and method and the Bender apparatus and method do substantially the same work in gamma ray logging in substantially the same way to accomplish substantially the same result. This is also true as to McCullough and Fearon in neutron logging. We must therefore conclude that the court's findings of infringement with respect to the Bender Reissue and Fearon Patents are not clearly erroneous.

Infringement of the Swift Patent.

The trial court's findings with respect to infringement of the Swift Patent are as follows: The accused McCullough logging apparatus with casing collar locator, both structurally and functionally, is substantially the same as the combination disclosed in Swift; each and every element of the Swift claims in issue is employed in the McCullough device and is used in the same way

to achieve the same result; each of those claims reads directly upon the McCullough device; and the Swift patent is infringed by the accused device. (199 F. Supp. at 386-387)

McCullough contends here, as it did at the trial, that its device does not infringe Swift because that device has a different combination of parts and a different mode of operation. In this connection, the lower court found, and the evidence confirms, that the Swift casing collar locator produces a surge of negative current every time it passes a casing collar, which surge interrupts the formation signals so that the latter drop to zero, and in the McCullough device there is no interruption of the radiation signals because continuous signals are provided from both the casing collar locator and the radiation detector. McCullough also points out that the Swift tool utilizes only one pen to record both the casing collar and radiation signals whereas the accused device uses two pens, one of which records casing collar signals and the other radiation signals, and argues that Swift is limited to a device in which the radiation signals are interrupted and in which only one pen is used to record the signals.

The trouble with this contention is that the claims are not so limited and the claims are the sole measure of the grant. Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336. Moreover, it appears from the Swift file wrapper that at one time the system whereby the signals are interrupted was explicitly claimed but was cancelled, thus indicating that the interruption feature was not critical to the invention. And, the patent itself recites that a possible variation of the device is to use two pens for the purpose of recording the two sets

of signals. In view of this, it is not surprising the court found that the interruption system was but one of several available means by which the radiation and casing collar signals could be transmitted and the Swift claims were not limited to that system and that none of the Swift claims were limited to a one pen recorder or a two pen recorder.

McCullough next asserts that Swift is limited to an interrupted signal system and one pen recorder by virtue of the doctrine of file-wrapper estoppel. However, the essence of the doctrine is that a patentee may not expand his allowed claims by interpretation to embrace features which he disclaimed in order to overcome objections by the Patent Office on the basis of prior art disclosures. Doran Coffee Roasting Co. v. Wyott Manufacturing Co., supra. It is not applicable where the patentee's difficulty results not from prior art similarities but from the wording and indefiniteness of the claims. Sears, Roebuck & Co. v. Jones, supra. In this case, the original claims upon which McCullough relies to invoke the doctrine were not rejected because they were unpatentable over the prior art. They were rejected on the formal grounds of being improper method claims and therefore file-wrapper estoppel is not applicable.

It is obvious from the record that the accused device does the same work in substantially the same way to accomplish substantially the same result as the device disclosed in Swift. Thus, the findings of infringement of the Swift Patent are not clearly erroneous.

Infringement of the Pringle Patent.

The lower court found in connection with Pringle that a fixed integral discriminator used in conjunction with a scintillation counter having a single crystal of at least 10 grams does not infringe any of the valid Pringle claims in issue, as limited; that infringement requires the use of either a variable integral discriminator or a differential discriminator; that the accused WSI instruments which utilize a single fixed integral discriminator to measure the intensity of gamma rays above a fixed discrimination level did not infringe the Pringle claims; and that the Dresser "Chlorinilog" device and method, which comprises a conventional neutron-gamma ray log made with a scintillation counter at a given discrimination level and a second neutron-gamma ray log made with the scintillation counter at a different discrimination level, did infringe the Pringle claims in issue. (199 F. Supp. at 388-389)

McCullough contends that the WSI instruments which utilize a fixed integral discriminator infringe the Pringle Patent and that the court's finding to the contrary is erroneous as is the holding that the Pringle claims in issue are invalid unless limited to spectral logging. In support of this contention, McCullough argues that a single fixed integral discriminator can be used to measure the energy of gamma rays and the finding to the contrary is in error. Thus, it argues, the WSI instruments which utilize the single fixed integral discriminator do infringe the Pringle claims. Of course, McCullough's argument here completely overlooks the crucial point made by the lower court during the course of the trial. That point is that unless the Pringle claims in issue are limited in the manner specified, they are

invalid over the prior art and an invalid patent cannot be infringed. Consolidated Electro. Corp. v. Midwestern Instruments, supra. When the claims in issue are limited as they must be in order to be valid over the prior art, the accused devices do not infringe those claims because they do not use either a variable integral discriminator or a differential discriminator.

WSI contends that the Dresser Chlorinilog operations do not infringe Pringle because they do not utilize a varying integral discriminator or a differential discriminator and they do not use a dual purpose shield, i.e., a shield to reflect and protect from moisture. Little need be said here. It is sufficient to say that the record clearly discloses the use of a variable integral discriminator in the Chlorinilog operations and that the Pringle claims are no more limited to a single shield for performing the dual function of moisture protection and reflection than the Swift claims are limited to an interrupted signals sytem. It is not the shield that is patented in Pringle. It is the method of logging that is patented. Beyond question, the Chlorinilog does substantially the same work as the apparatus and method disclosed in Pringle and in substantially the same way to accomplish substantially the same result. Infringement of the Pringle Patent, as the claims are limited, is therefore established.

The Issue of Misuse.

The record clearly establishes, and the parties do not dispute, that WSI misused its patents in certain respects over the years. The controversy centers around the lower court's holding that such misuse was discontinued and purged as of June 1, 1956. McCullough

appeals from that holding and contends that there has been no purge and the misuse has never been discontinued. WSI has cross-appealed contending that the purge was effected as of April 1, 1954. The issues then are whether WSI effected a purge of its wrongdoing and, if so, when.

On June 11, 1940, WSI entered into its first written license agreement with Lane-Wells. At this time, Lane-Wells was engaged in the business of oil well servicing for hire and, among other logging operations, rendered radioactivity well logs from shortly after June 11, 1940, until its liquidation in 1958. Lane-Wells was then the owner of the Bender Reissue Patent but did not conduct any research in the field and did not manufacture apparatus for radioactivity well logging. It held no patents relating to such logging other than Bender and confined itself to rendering well completion services for hire to others. On the other hand, WSI did hold a number of patents and patent applications relating to radioactivity well surveying and was conducting research and development work in that field as well as manufacturing apparatus for use in that field.

In the contract of June 11, 1940, WSI licensed Lane-Wells under its patents to engage in radioactivity well surveying for others for hire and such license was exclusive with two exceptions, one of which was that WSI reserved the right to practice the methods for its own account. The agreement contained, among others, the following conditions: (1) Lane-Wells was required to purchase from WSI all detecting and recording instruments for use in its radioactivity well logging services, including those used in the exercise of the licensed right, together with all equipment and ma-

terial directly related to radioactivity measurements; and (2) Lane-Wells agreed that it would not, during the contract term, engage intentionally in research and development work in radioactivity well logging but would leave such research to WSI, which agreed to continue it. This contract originally was to be in effect until December 3, 1950, and from year to year thereafter unless terminated by notice. However, under an agreement dated January 1, 1948, it was extended to December 31, 1960, but was actually terminated on April 16, 1951.

On March 3, 1942, WSI and Lane-Well entered into a second written agreement under the terms of which WSI granted an exclusive license to Lane-Wells covering its new method of radioactivity well logging by means of "neutron-gamma ray logging". This is the method covered by the Fearon Patent in suit. This contract contained the same exceptions and conditions as those contained in the June 11, 1940, agreement. It was extended to December 31, 1960, and then terminated on April 16, 1951.

On July 30, 1945, WSI and Lane-Wells entered into a third written agreement which granted an exclusive license to Lane-Wells under the WSI patents relating to a means or method for locating casing collars in radioactivity well logging for others for hire, *i.e.*, the method and apparatus covered by the Swift Patent in suit. This contract contained the same two exceptions as did the other contracts. However, the agreement was conditioned only by requiring Lane-Wells to purchase all detecting and recording instruments utilized in practicing the licensed method from WSI. The con-

tract was extended and terminated in the same manner as the two preceding agreements.

On April 16, 1951, WSI and Lane-Wells entered into another written contract, under the terms of which Lane-Wells surrendered its exclusive licenses granted in the three preceding contracts and such contracts were terminated. This agreement apparently came about, at least in part, as the result of two factors. In 1948, the first competition in the field appeared on the scene and, in 1950, Lane-Wells purchased the one-half interest in WSI capital stock that was formerly held by individual stockholders. By the terms of the new contract, Lane-Wells received a non-exclusive license under all of WSI's patents, including the three patents in suit, and agreed that WSI could license other persons to practice its patented methods. However, the right to license third persons was conditioned upon the using of one of two alternative agreement forms and upon the terms stated in the contract, except with the consent of Lane-Wells. These contract terms required that the licenses be granted only under all of WSI's patents and at fixed royalty rates. The two forms of license agreements were denominated as "Immunity" and "Research-Service and License" agreements and the precise forms thereof were set forth as exhibits to the April 16, 1951, contract. Lane-Wells was not granted a license to manufacture or procure instruments for practice of the licensed methods and none was permitted to be granted to research and service licensees. And, the royalty base of licenses which WSI was permitted to make with third parties was required to extend to all radioactivity well logging whether or not accomplished by a licensed means or method, except as Lane-Wells might otherwise consent.

The two forms of license agreements were to be offered on an alternative basis. The Immunity Agreement was designed for licensees who desired to do their own research and manufacture their own equipment. It was a bare license, at a royalty rate of 5 per cent, under all of the WSI and Lane-Wells patents relating to radioactivity well logging issued on or before December 31, 1950. Under this type of agreement the licensee could make his own instruments or have someone else make them but did not have the right to purchase the instruments from WSI or to receive the benefit of WSI's research. The Research-Service and License agreement was designed for licensees who did desire to take advantage of WSI's research efforts and to purchase the necessary instruments from WSI. It fixed the royalty rate at 15 per cent and granted a license under all present and future patents of WSI and Lane-Wells. This type of agreement did not grant a licensee the right to manufacture instruments himself or have them manufactured by someone else. Although it did not specifically require a licensee to purchase his instruments from WSI, the practical effect of this agreement was that a licensee would be guilty of infringing WSI's patents if he purchased infringing instruments from a source other than WSI.

The April 16, 1951, contract was to remain in effect until December 31, 1960, and from year to year thereafter until terminated by notice. It was in fact terminated by a subsequent agreement between the parties dated June 1, 1956. On that date, WSI and Lane-Wells entered into a written agreement which the trial court found resulted in a "decisive change" in WSI's patent licensing policy. The April 16, 1951, agreement

was terminated and the standard forms of license agreement were amended to permit research and service licensees to manufacture or procure instruments from sources other than WSI. This agreement did not contain any provision limiting the right of WSI to license others or requiring the consent of Lane-Wells to any such license. In addition, WSI published notice advising the public that it was prepared to license any or all of its patents on reasonable terms, it wrote letters to all of its existing licensees offering termination of existing agreements and negotiation of new ones on reasonable terms and it was willing to grant licenses under its patents, individually or collectively, upon negotiated reasonable terms.

The lower court found and held: By the agreements of June 11, 1940, March 3, 1942, and July 30, 1945, WSI misused its patents in that the agreements required Lane-Wells to purchase all of its detecting and recording instruments from WSI and prohibited Lane-Wells from engaging in research; during the effective periods of those three contracts, Lane-Wells did, in fact, purchase all instruments from WSI and refrain from conducting research in accordance with such contracts; the April 16, 1951, agreement was a substantial change from the 3 prior contracts in that it did not expressly provide that Lane-Wells should purchase the instruments from WSI and did not restrict Lane-Wells from conducting research; however, the April 16, 1951, contract did in fact also involve misuse of patents in two respects by requiring WSI to obtain the consent of Lane-Wells before granting a license to a third party on any form other than the standard forms set forth as exhibits to the agreement

thereby coercing the acceptance of the standard forms and by the failure to give a Research-Service licensee an express license to manufacture its own instruments, the licensee in effect was compelled to buy any instruments covered by WSI patents from WSI; from April 16, 1951, until June 1, 1956, WSI was dominant in the market for the sale of instruments and apparatus for radioactivity well logging and refused to sell such apparatus to persons other than those holding one of its license agreements; after June 1, 1956, it was no longer dominant in the market; by its actions in 1956, WSI "* * * accomplished a complete purge of previously existing patent abuses as of June 1, 1956. * * *"; and the royalty base employed in the license agreements by WSI after june 1, 1956, which included operations covered by expired patents, was not coercive but was voluntary upon the part of the licensees.

The law in this area is no longer open to question. It has been held in a long line of patent cases that a patentee who utilizes a so-called "tying arrangement" will be denied all relief against infringement of his patent. The White Motor Company v. United States, 372 U.S. 253; International Salt Co. v. United States, 332 U.S. 392; Mercoid Corp. v. Mid-Continent Investment Co., 320 U.S. 661; Morton Salt Co. v. G. S. Suppiger Co., 314 U.S. 488; Ethyl Gasoline Corp. v. United States, 309 U.S. 436; Leitch Mfg. Co. v. Barber Co., 302 U.S.458; Carbice Corp. v. American Patents Development Corp., 283 U.S. 27; Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502; Cole v. Hughes Tool Company, 10 Cir., 215 F.2d 924, cert. denied, 348 U.S. 927; Williams v. Hughes Tool Co., 10 Cir., 186 F.2d 278, cert. denied, 341 U.S. 903; Ber-

lenbach v. Anderson and Thompson Ski Co., 9 Cir., 329 F.2d 782, cert. denied, 13 L. Ed. 2d 39. The Supreme Court stated in United States v. Loew's, Inc., 371 U.S. 38, 46, that "* * * [t]hese cases reflect a hostility to use of the statutorily granted patent monopoly to extend the patentee's economic control to unpatented products. The patentee is protected as to his invention, but may not use his patent rights to exact tribute for other articles." A tying arrangement has been defined as "* * * an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product, or at least agree that he will not purchase that product from any other supplier * * *" and "* * * [w]here such conditions are successfully exacted competition on the merits with respect to the tied product is inevitably curbed. * * *" Northern Pacific R. Co. v. United States, 356 U.S. 1, 5, 6.

WSI contends that the April 16, 1951, agreement does not involve misuse of its patents and, in any event, such misuse was discontinued and purged as of April 1, 1954. It argues that the provision of the contract requiring WSI to obtain the consent of Lane-Wells before granting licenses to third persons in other than the specified standard forms and its failure to give a Research-Service licensee an express license to manufacture its own instruments were not misuses of the patents. The lower court found that the practical effect of the Research-Service license agreements issued pursuant to the April 16, 1951, contract was to require such licensees to purchase the necessary instruments from WSI. There is no showing that this finding is clearly erroneous and it establishes the prohibited

"tying arrangement" that existed in the three prior contracts. Moreover, the contract imposes definite restrictions and restraints upon WSI's own activities and dealings with third parties in regard to its patents. It has been held that such agreements are against the public interest. McCullough v. Kammerer Corporation, 9 Cir., 166 F.2d 759, cert. denied, 335 U.S. 813; United States v. Besser Mfg. Co., 96 F. Supp. 304 (E.D. Mich. 1951), aff'd, Besser Manufacturing Co. v. United States, 343 U.S. 444. Thus, the contract involves two prohibited provisions and is against the public interest.

WSI's argument on the point of discontinuation and purge of the misuse as of April 1, 1954, is apparently based upon the fact that as of that date Lane-Wells became the sole owner of all of the WSI stock and, therefore, there could be no illegal activity under the rule announced in Alpha Distributing Co. of Cal. v. Jack Daniel's Distillery, 207 F. Supp. 136 (N. D. Cal. 1961), aff'd, 9 Cir., 304 F.2d 451. That case is not applicable here. It involved price fixing and concert between corporate affiliates to select a distributor. It does not involve patent licensing agreements which impose restrictions and restraints upon one party thereto and it has nothing whatever to do with a "tying arrangement".

This case then involved a situation in which the contract providing for the prohibited practices endured in legal effect and in actual performance until June 1, 1956, at which time it was terminated. The acquisition of the remaining WSI stock by Lane-Wells on April 1, 1954, did not effectuate any basic change in the form of the contract, the practical relation of the parties or the performance of the contract. It was

treated by both parties as legally binding and they continued to deal at arm's length. In short, there is nothing but the bare change in ownership of WSI stock to support WSI's position and under the law that is not sufficient to effect a purge. United States Gypsum Co. v. National Gypsum Co., 352 U.S. 457.

This brings us to the question presented on the direct appeal, namely, whether the lower court erred in holding that WSI had discontinued its misuse and purged itself as of June 1, 1956. McCullough first argues that the misuse of utilizing the so-called "tying arrangement" continued in at least 3 instances after June 1, 1956, and that the effects of such misuse have never been fully dissipated. This assertion is not borne out by the record. The new agreement forms provided by the June 1, 1956, contract eliminated the two conditions in the April 16, 1951, agreement which were held to be improper. In addition, WSI notified its licensees and potential licensees by letter and public notice that it would enter into new agreements or renegotiate old agreements on reasonable terms under any or all of its patents.

The second point has to do with the licensing methods used by WSI. McCullough asserts that WSI misused its patents by conditioning the licensing agreements upon the acceptance of a license under all of its patents in violation of the "package" or "block-booking" rules and that such misuses were never discontinued. It is true that a patentee unlawfully uses a patent monopoly when, for a fixed royalty, he refuses to grant a license under one or more of his patents unless a license is taken under all of his patents. United States v. Paramount Pictures, Inc., 334 U.S. 131;

Ethyl Gasoline Corp. v. United States, 309 U.S. 436. However, in order to constitute a misuse, there must be an element of coercion, such as where there has been a request by a prospective licensee for a license under less than all of the patents and a refusal by the licensor to grant such a license. Automatic Radio Mfg. Co. v. Hazeltine Research, Inc., 339 U.S. 827. There is no such showing of coercion in this case. In fact the trial court specifically found: "After June 1, 1956, WSI has been willing to grant licenses on its patents individually or collectively upon negotiated reasonable terms. * * * There was no coercion of licensees contracting subsequent to June 1, 1956, to accept license under all of the WSI patents unwillingly." (199 F. Supp. at 395)

Finally, McCullough contends that WSI has misused its patents, and continues to misuse them, by including unpatented operations in the royalty base under the license agreements and by collecting royalties under those agreements on operations covered by expired patents. It asserts that the patent relationship between a patentee and the sovereign requires that an expiring patent be made absolutely free to the unencumbered practice of all and that any restrictions upon such free practice by any means whatsoever is prohibited. It is undisputed that the license agreements in question are of the "package" type, under which all of WSI's patents in the field of radioactivity are included. The record does, indeed, show that under most, if not all, of those agreements the royalties payable are based upon the gross charges made by the licensee for his radioactivity well logging operations, including those not covered by the WSI patents. The record also shows that the royalty base in many, if not all, of the license agree-

ments includes operations covered by patents that expired after the agreements were entered into by the parties.[8] In addition, the trial court found, and the evidence confirms, that WSI continued to the date of judgment below to grant licenses in which the royalty base includes receipts derived from operations covered by the expired Bender Reissue and Fearon Patents, except in instances where the licensee has accepted WSI's offer to license its patents on a narrower basis.[9] But, the trial court also found that while the royalty base in the license agreements made by WSI after June 1, 1956, purported to include operations covered by the expired patents, such agreements were not coerced by WSI but were voluntary on the part of the licensee.[10] And, it is clear from the record that all of the license agreements included patents which had not expired. It should also be remembered that on June

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[8]These are, of course, the Bender Reissue Patent, which expired on October 18, 1955, and the Fearon Patent which expired on January 12, 1960.

[9]The finding reads as follows:

"WSI has continued to the date of this finding to grant licenses in which the royalty base is all of the licensee's receipts from radioactivity well logging operations, including those covered by the expired Bender and Fearon neutron patents, except where the licensee has accepted WSI's offer to grant a license on an individual patent basis or on some other narrower basis. WSI continues to the date of this finding to receive royalty payments from one or more of its licensees calculated on a royalty base which includes receipts of the licensee from operations covered by the said expired Bender and Fearon patents."

[10]That finding is as follows:

"While the royalty base employed in the standard license agreements made by WSI after June 1, 1956, included or purported to include operations covered by the expired Bender patent, the extension of the royalty base to cover practice of expired patents was not coerced, after June 1, 1956, but was voluntary upon the part of the licensees, who were offered a real alternative by WSI's offer to grant a license under any individual patent or patents upon negotiated terms."

1, 1956, WSI initiated a policy whereby it offered to terminate existing agreements and negotiate new ones on reasonable terms covering any patents the licensee desired.

The question thus presented is whether a licensee agreement covering a package of patents, voluntarily entered into by the parties, is unlawful by reason of the fact that the royalties payable thereunder are based upon the licensee's overall operations and upon a package of patents, some of which have expired or will expire during the effective period of the agreement. The validity of such an agreement was upheld by the Supreme Court in Automatic Radio Mfg. Co. v. Hazeltine Research, Inc., 339 U.S. 827. The facts in that case are almost identical with the facts in this case. There, as here, the license agreements offered by the patentee were of the so-called package type and included all of its present and future patents. The package licenses were offered for a flat percentage of the licensee's operations, whether or not any of the patents were used. There, as here, some but not all of the patents had expired before the license agreement in question was executed and more of them would expire during the effective period of the agreement. The Court held that the royalty provision did not create a monopoly or operate as a restraint of trade. It noted that there was no evidence to show that the patentee had "* * * refused to grant a license under any one or more of its patents to anyone who refused to take a license under all * * *" (339 U.S. at 831) and said:

> "* * * We cannot say that payment of royalties according to an agreed percentage of the licensee's sales is unreasonable. Sound business judg-

> ment could indicate that such payment represents the most convenient method of fixing the business value of the privileges granted by the licensing agreement. We are not unmindful that convenience cannot justify an extension of the monopoly of the patent. * * * We hold that in licensing the use of patents to one engaged in a related enterprise, it is not per se a misuse of patents to measure the consideration by a percentage of the licensee's sale (339 U.S. at 834)

We have held our decision in this case in abeyance pending the opinion of the Supreme Court in Brulotte v. Thys Co., ... U.S. ...., 13 L. Ed. 2d 99. It was thought that Brulotte would have some bearing upon the aspect of the misuse issue presently before us and further arguments as to its applicability were heard upon the court's own motion. However, from those arguments and after a careful study of the Brulotte opinion, we are convinced that it does not compel or even justify a reversal on the issue of misuse. Nor do we think that other cases relied upon by McCullough require or justify such a reversal. E.g., Scott Paper Co. v. Marcalus Mfg. Co., 326 U.S. 249; Prestole Corporation v. Tinnerman Products, Inc., 6 Cir., 271 F.2d 146, cert. denied, 361 U.S. 964; Ar-Tik Systems, Inc. v. Dairy Queen, Inc., 3 Cir., 302 F.2d 496; American Securit Co. v. Shatterproof Glass Corp., 3 Cir., 268 F.2d 769, cert. denied, 361 U.S. 902.

We certainly recognize the principles enunciated in Brulotte and the other cases but think there are important distinctions between those cases, on the one hand, and the Hazeltine case and this case, on the

other. In Brulotte and Ar-Tik the license agreement under consideration attempted to extend the period for paying royalties beyond the date of expiration of the last of the patents covered by the agreement. That is not the case here or in Hazeltine. In the Art-Tik and Shatterpoof cases the licensees were coerced into taking a license agreement covering all of the licensor's patents by virtue of the licensor's refusal to grant anything but a package license agreement covering all of the patents. In other words, the licensee in those cases had to take all or none of the patents and no alternative was available. In both this case and Hazeltine, the package license was purely voluntary and a licensee who did not want the whole package could obtain a license on a reasonable basis covering any particular patent he did want. And, of course, neither the Scott Paper Co. case nor the Prestole case involved the issue of misuse of patents on the grounds here under consideration.

We conclude that the facts of this case as found by the trial court upon ample supporting evidence bring it squarely within the rule of Hazeltine. We therefore agree with the trial court that WSI misused its patents in suit for the period beginning June 11, 1940, and continuing until June 1, 1956, but that such misuse was purged as of June 1, 1956. WSI may not recover during the period of the misuse for infringement of the three patents but is entitled to have its valid and unexpired patents enforced against infringement occurring from and after June 1, 1956.

The Motion for New Trial.

After judgment below, McCullough filed a motion for a new trial on the grounds of newly discovered evidence. This evidence consisted of expert opinions supporting the contention that the McCullough tool has a different mode of operation than Bender and Fearon; two WSI instruction manuals to prove non-infringement by the McCullough tool; and a series of demonstrations made by one of its witnesses at the hearing upon the motion below.

A motion for new trial is addressed to the sound discretion of the trial court, and the granting or denial of such a motion will not be disturbed on appeal except for manifest abuse of discretion. Coffey v. United States, 10 Cir., 333 F.2d 945; Walter v. Warner, 10 Cir., 298 F.2d 481. Before a new trial may be granted on the basis of newly discovered evidence, there must be a showing that the alleged newly discovered evidence was discovered since the trial; facts from which the court may infer reasonable diligence on the part of the moving party; that the evidence is not merely cumulative or impeaching; that the evidence is material; and the evidence is of such a character that on a new trial it will probably produce a different result. Kansas City Southern Railway Company v. Cagle, 10 Cir., 229 F.2d 12, cert. denied, 351 U.S. 908; Crow v. Dumke, 10 Cir., 142 F.2d 635. McCullough contends that these rules are not applicable to patent litigation because of the public nature of the subject matter and

in support of such contention cites and relies upon Mercoid Corp. v. Mid-Continent Investment Co., 320 U.S. 661, 665. We do not agree. Jamco, Incorporated, v. Carlson, 10 Cir., 274 F.2d 338, 342.

The record not only fails to show facts from which an inference of diligence might be made and that the alleged newly discovered evidence would produce a different result, but it also fails to show that such evidence was, in fact, newly discovered or discovered since the trial. Furthermore, the evidence relied upon would appear to be merely cumulative. Under all of these circumstances, it cannot be concluded that the lower court manifestly abused its discretion in denying the motion.

Conclusion.

We have carefully considered other contentions made by the parties and have concluded that they are without merit. The judgment below is therefore AFFIRMED and the case is REMANDED for further proceedings in accordance with that judgment.

Judgment.

Forty-Sixth Day, January Term, Wednesday, March 17th, 1965.

Before Honorable Alfred P. Murrah, Chief Judge, and Honorable Jean S. Breitenstein and Honorable Delmas C. Hill, Circuit Judges.

These causes came on to be heard on the transcript of the record from the United States District Court for the Northern District of Oklahoma and were argued by counsel.

On consideration whereof, it is ordered and adjudged by this court that the judgment of the said district court in these causes be and the same is hereby affirmed, and that these causes be and the same are hereby remanded to the said district court for further proceedings in accordance with that judgment.

Order Denying Appellants' Petition for Rehearing.

Seventeenth Day, March Term, Tuesday, April 20th, 1965.

Before Honorable Alfred P. Murrah, Chief Judge, and Honorable Jean S. Breitenstein and Honorable Delmas C. Hill, Circuit Judges.

These causes came on to be heard on the petition of appellants for a rehearing herein and were submitted to the court.

On consideration whereof, it is ordered by the court that the said petition be and the same is hereby denied.

By order of April 29, 1965, the mandate of the United States Court of Appeals was stayed for a period of ninety days from April 20, 1965, under provision of paragraph 3 of rule 28 of said court.

Opinion of the United States District Court for the Northern District of Oklahoma.

Civil Action No. 4271

Well Surveys, Incorporated, Plaintiff, v. McCullough Tool Company, Defendant.

Civil Action No. 3956

McCullough Tool Company, Robert W. Pringle, Kenneth I. Roulston, George M. Brownell, and Philip W. Martin, Plaintiffs, vs. Well Surveys, Incorporated, and Dresser Industries, Inc. (substituted for Lane-Wells Company), Defendants.

United States District Court for the Northern District of Oklahoma.

March 16, 1961

As Amended Aug. 25 and Oct. 18, 1961.

R. Whelton Whann and Robert M. McManigal, James E. Harrington, Los Angeles, Cal., Williams, Boesche & McDermott, Tulsa, Okla., Hill, Sherman, Meroni, Gross & Simpson and Carlton Hill, Chicago, Ill., for McCullough Tool Co.

Fulwider, Mattingly & Huntley, Los Angeles, Cal., McAfee, Hanning, Newcommer & Hazlett and Rufus Day, Jr., Cleveland, Ohio, Farmer, Woosley, Flippo & Bailey, Robert K. Schumacher, Tulsa, Okla., for Wells Surveys, Inc.

Savage, Chief Judge.

The above-entitled consolidated causes having come on regularly for trial and evidence both oral and documentary having been introduced, the Court, having duly considered said evidence and the arguments of counsel and being fully advised in the premises, now makes the following findings of fact and conclusions of law herein.

Findings of Fact.

General Findings

1.

Civil Action No. 4271 was originally filed on June 15, 1956 in the United States District Court for the Southern District of Texas, Houston Division, under Civil Action No. 9817 of said Court, by Well Surveys, Incorporated, a Delaware Corporation, having its principal place of business in Tulsa, Oklahoma. This action arose under the patent laws of the United States and this Court has jurisdiction thereof under 28 U.S.C. § 1338(a). The Complaint alleged infringement by McCullough Tool Company, which is a Nevada Corporation having places of business in Los Angeles, California, Houston, Texas, and Tulsa, Oklahoma, of United States Patents Re. 23,226 and 2,308,361. Said Action was thereafter, transferred by order of the Honorable Judge Joe Ingraham of the District Court for the Southern District of Texas, Houston Division, by an Order dated July 30, 1957 to this Court, wherein the Action was duly filed on August 2, 1957 under Civil Action No. 4271.

2.

The Complaint in Civil Action No. 4271 was amended several times by adding and deleting patents owned by Well Surveys, Inc. that were charged to be infringed by McCullough Tool Company. The Fifth and last Amended Complaint charged infringement of nine (9) patents owned by Well Surveys, Inc. Subsequently and before trial, by stipulation of the parties, the Complaint was dismissed with prejudice as to Patents No. 2,285,840 and No. 2,303,688, and without prejudice but with waiver of damages prior to the filing of the stipulation

with the Court as to Patents No. 2,636,994 and No. 2,689,918.

3.

At the time of trial, Well Surveys, Inc., hereinafter sometimes referred to as WSI, charged McCullough Tool Company, hereinafter sometimes referred to as McCullough, with infringement of the following patents: Bender Reissue No. Re. 23,226; Fearon No. 2,308,-361; Fearon No. 2,390,433; Swift No. 2,554,844; Fearon Reissue No. Re. 24,226.

4.

Civil Action No. 3956 was filed in this Court on June 15, 1956 by McCullough Tool Company under 28 U.S.C. § 2201 and 28 U.S.C. § 1338(a) alleging misuse by WSI of all of its patents as listed in Exhibit A attached to the Complaint, and asking for a declaratory judgment of unenforceability, invalidity and non-infringement of said patents. By subsequent amendment to the Complaint, a charge of infringement of Patent No. 2,686,266, issued to the Plaintiffs Pringle, Roulston and Brownell, all of whom are citizens of the Dominion of Canada, and Patent No. 2,686,268, issued to Plaintiffs Martin and Pringle, above-named, was added and Lane-Wells Company, then a California corporation and now a division of Dresser Industries, Inc., was added as a party defendant to said charge of infringement. By further amendment, the said Robert W. Pringle, a resident of Edinburgh, Scotland, Kenneth I. Roulston, a resident of Winnipeg, Canada, George M. Brownell, a resident of Winnipeg, Canada, and Philip W. Martin, a citizen of the United States and a resident of Whittier, California, the above-named patentees, were added as parties Plaintiff. Dresser In-

dustries, Inc., a Delaware corporation was subsequently substituted as a party Defendant in the place and stead of Lane-Wells Company.

5.

By pre-trial order dated March 31, 1960, said Civil Action Nos. 4271 and 3956 were consolidated for all purposes, it being further stipulated and ordered that WSI made no charge of infringement of any of the patents listed in the Complaint in Action No. 3956 other than the five (5) patents in suit in Civil Action No. 4271 and that the question of validity of all WSI patents not in suit in Civil Action No. 4271 was moot. It was further stipulated and ordered in said pre-trial order that there was no issue before the Court with respect to any of the claims of any of the patents in suit in either action other than the claims specified by the respective parties in answers to interrogatories then on file, which claims in issue will be enumerated hereinafter in findings dealing with specific patents.

6.

Well Surveys, Inc., was incorporated on May 4, 1939 to carry forward the research and development work concerning radioactivity well logging then being done by Engineering Laboratories, Inc. looking toward the development of commercial methods of radioactivity well logging and apparatus therefor. Such methods and apparatus were subsequently developed and offered commercially to the oil industry by Well Surveys, which continued to engage in research and development relating to methods and apparatus for radioactivity well logging.

7.

Prior to the introduction of radioactivity well logging, there had long existed a well recognized need for logging through casing. Radioactivity well logging was the first method to successfully log through casing, and it is still the only method available to the oil industry for logging through casing. Radioactivity well logging can also be, and often is, used to log open holes, i.e., wells before they are cased. WSI and Lane-Wells were the first to offer commercial natural gamma ray logging and neutron logging services to the oil industry. In 1940, the first year of the commercial radioactivity well logging industry, the gross sales amounted to $32,165. In 1948 the gross sales by Lane-Wells for radioactivity well logging amounted to more than $3,000,000.

8.

While the term radioactivity well logging was originally applied to methods of detecting and measuring radiation naturally emitted by the earth's formations surrounding a well, it soon became a generic term and now is used to designnate any well logging in which radiations coming from the formations, whether they be natural or artificially produced, are detected and measured. At the present time, the more commonly used kinds of radioactivity well logging are natural gamma ray logging, neutron logging, and gamma ray-gamma ray logging. Various special types of radioactivity well logging have also been proposed and some have been used commercially as will be mentioned in later findings. Radioactivity well logging is sometimes called radioactivity well surveying or radiation well logging.

9.

Natural gamma ray logging is the process whereby gamma rays naturally emitted by formations traversed by a bore hole are measured. Natural gamma ray logging is performed by the parties by lowering into the bore hole a tool containing a radiation detector which, as a result of the impingement thereon of gamma rays naturally emitted by the formations, produces output signals indicative of said gamma rays, transmitting said signals to the earth's surface, and utilizing said signals to produce a record of gamma rays detected in correlation with the depth of said detector in the bore hole. The record thus obtained by the parties in the form of a curve indicating relative number per unit of time of natural gamma rays at different depths, is a conventional natural gamma ray log, sometimes simply called a gamma ray log.

10.

Neutron logging is the process whereby formations traversed by a bore hole are bombarded with neutrons and radiations emitted by said formations as a result of said bombardment are measured. Neutron logging is performed by the parties by lowering into the bore hole a tool containing a neutron emitting source and a detector which produces output signals indicative of the radiation impinging thereon as a result of neutron bombardment of the formations, transmitting said output signals to the surface of the earth, and utilizing said signals to produce a record of radiation detected in correlation with the depth of said detector in the bore hole. The record thus obtained by the parties in the form of a curve indicating relative number per

unit of time of radiations emitted at different depths by the subsurface formations as a result of the neutron bombardment is a conventional neutron log. As a result of neutron bombardment a formation may emit either neutrons or gamma rays or both. When the gamma rays are detected, the resulting neutron log is termed a neutron-gamma ray log. When the neutrons are detected, the resulting neutron log is termed a neutron-neutron log. When fast neutrons are detected, the resulting log is termed a neutron-fast neutron log.

11.

Gamma ray-gamma ray logging is the process whereby gamma rays emitted by the subsurface formations as a result of gamma ray bombardment thereof are measured. Gamma ray-gamma ray logging is performed by the parties by lowering into the bore hole a tool containing a gamma ray emitting source and a gamma ray detector which produces output signals indicative of the gamma rays impinging thereon as a result of said bombardment, transmitting said output signals to the earth's surface, and utilizing said signals to produce a record of gamma rays detected in correlation with the depth of said detector in the bore hole. The record thus obtained by the parties in the form of a curve indicating relative number per unit of time of gamma rays emitted at different depths by the subsurface formations as a result of the gamma ray bombardment is a conventional gamma ray-gamma ray log, sometimes called a gamma-gamma log, or a scattered gamma ray log. Gamma ray-gamma ray logging may be used to indicate formation density and when so used is usually called density logging.

12.

Spectral logging involves discerning the energies or wave lengths of gamma rays given off by various elements within the formations surrounding the well bore and presenting this information at the surface of the earth in the form of gamma ray spectra. It thus permits discrimination between the various elements. Spectral logging is the process of detecting and measuring the energy of the gamma radiation in addition to the intensity thereof, thereby permitting a distinction to be made in the gamma ray emissions of radioactive substances of different characteristics and in the nature of the neutron capture gamma rays emitted by the nuclei of different materials; it is thus distinguished from conventional gamma ray, neutron-gamma ray and gamma ray-gamma ray logging which involve merely the measurement of the total intensity of all of the gamma rays impinging upon the detector with energies above some threshold level.

13.

Lane-Wells Company was the first service company licensed by Well Surveys, Inc. and in 1940 obtained equipment from Well Surveys, Inc. and started offering natural gamma ray logging as a commercial service to the oil industry. By 1942, Well Surveys had developed neutron logging to a commercial state and Lane-Wells started offering this additional service to its customers. Lane-Wells Company, as a separate corporation and more recently as a division of Dresser Industries, has continued to offer natural gamma ray and neutron logging services to the trade.

14.

McCullough Tool Company first offered natural gamma ray logging service to the industry in 1950 and soon thereafter offered neutron logging service and since that time has continued to supply both types of logging to its customers. In performing these services McCullough has always used scintillation counters. The methods and equipment used by McCullough in performing gamma ray logging and neutron logging for hire are illustrated in WSI Patent Ex. 10 which is a booklet of drawings, each lefthand page representing the drawings of one of the WSI patents in suit and each righthand page being an illustration of the corresponding McCullough equipment and method. Said drawings contained in WSI Ex. 10 were admitted to be substantially accurate representations of the equipment they portray and to contain no error or incompleteness in any way affecting this case.

Findings Directed Primarily to Bender Patent No. Re. 23,226

15.

The application for the original Bender patent was filed by John C. Bender on February 18, 1936 and was issued to Lane-Wells Company on October 18, 1938 as Patent No. 2,133,776. Application for reissue was filed on October 4, 1940 and said patent was reissued to Lane-Wells Company on May 9, 1950 as Re 23,226. Said reissue patent was subsequently assigned by Lane-Wells Company to Well Surveys together with all rights to recover for infringement thereof, and is sometimes herein referred to as the Bender patent. The Bender invention pioneered the wholly new art of radio-

activity well logging. The Bender patent was the first to disclose and teach natural gamma ray logging and is a primary and pioneer patent. The method of practicing natural gamma ray logging as fully disclosed by said patent comprises traversing the various strata of a well with a radiation detector to produce electrical signals indicative of the natural radioactivities of the strata, transmitting said signals to the surface and there recording them in correlation with depth to produce a log giving information concerning the lithology of said formations. No such log had ever been made prior to Bender's invention. This was a new and useful result never before obtained. The specific radiation detector disclosed by Bender was a Geiger counter which produces an electrical impulse for each gamma ray detected. Well Surveys first performed radioactivity well logging commercially in the spring of 1940 utilizing the invention of the Bender patent.

16.

Claims 14, 15, 16, 19 and 20 of the Bender patent are in issue in this case. Each of said claims in issue is limited to a method or apparatus for measuring *in situ* radiations from formations traversed by a bore hole, to produce a radioactivity log of said subsurface formations as distinguished from the taking of formation samples to the surface and there measuring their radioactivity, or the mere measuring of the radioactivity of surface rocks.

17.

Earth formations exhibit to a greater or lesser degree some natural gamma ray activity. Shales and clays contain relatively large amounts of materials which naturally emit gamma rays; whereas sandstones and

limestones contain relatively small amounts of natural gamma ray emitting materials.

18.

Page 1A of WSI Exhibit No. 10 and WSI Exhibit No. 11 (A, C and D) illustrate the natural gamma ray logging apparatus utilized by McCullough since 1950. Reference to said exhibits and the uncontroverted testimony of witnesses clearly shows that the method of natural gamma ray logging used by McCullough comprises lowering a scintillation counter type of radiation detector into the bore hole, exposing said detector to the gamma rays from the subsurface formations thereby generating pulse type electrical signals at a rate indicative of the intensity of said gamma rays from the respective formations, and continuously transmitting said signals over the logging cable to the surface equipment where they are counted by a rate meter, the output of which is continuously recorded during logging operations in correlation with depth of subsurface instrument, whereby the formations may be differentiated by intercomparison of their respective gamma ray intensities recorded for the various levels. The rate of occurrence of the electrical pulses generated by the McCullough apparatus is a quantitative measure of the natural gamma ray activity of the formation adjacent the counter. The steel housing of the McCullough subsurface instrument is relatively transparent to the natural gamma rays emanating from the formations and also is mechanically resistant, thereby to protect the scintillation counter. Said method practiced by McCullough includes each and every step recited in the Bender method Claims 14, 15, 19 and 20 and the McCullough apparatus used in said method includes each and every

element of Bender apparatus Claim 16. Each of the Bender claims in issue reads directly on the McCullough method and apparatus. Said method and apparatus of McCullough accomplish the same result in substantially the same way as the Bender method and apparatus and are the full equivalent thereof. Each of the Bender claims 14, 15, 16, 19 and 20 has been infringed by McCullough each and every time it performed a natural gamma ray logging operation prior to the expiration of the Bender patent.

19.

The scintillation counter utilized in the McCullough natural gamma ray logging apparatus is a radiation responsive generator of impulses, is a member sensitive to radioactivity and is adapted to translate said radiations into electrical impulses with the number of said impulses corresponding to the number of said radiations to quantitatively measure the radioactive properties of the formations encountered at different depths inside the drill hole. Geiger counters, scintillations counters and ionization chambers are all radiation detectors sensitive to gamma rays, they all accomplish the same result in substantially the same manner, they all detect radiation by producing electrical signals indicative thereof, and it is a matter of choice as to which type of radiation detector is used in performing natural gamma ray logging operations. The resulting logs are substantially the same regardless of the type of detector used. The scintillation counter used by McCullough in its natural gamma ray logging operations, performs no different function from that performed by the Geiger counter of Bender, the modes of operation are the same and they are full equivalents

in said logging operations. None of the Bender claims in issue is limited to a Geiger counter or any specific type of radiation detector, nor is any such limitation demanded by the prior art or the proceedings in the Patent Office.

20.

Although a scintillation counter may be used to determine the energy spectrum of natural gamma rays, as with the McCullough Scintillation Spectrometer, McCullough Tool Company in its conventional natural gamma ray logging operations does not determine the energy spectrum of the natural gamma rays measured. The McCullough natural gamma ray log is a measure of the number per unit of time of gamma radiation that results from the natural disintegration of radioactive elements.

21.

No prior art relied upon by McCullough discloses or teaches the invention of any of the Bender claims in issue or negates the fact that John C. Bender was the first and original inventor of the invention described by said claims. Specifically, the Ambronn publication considered by the Patent Office and relied upon very heavily by McCullough at the trial, neither discloses nor teaches the use of a Geiger counter or any other type of radiation detector which produces an electrical signal; Ambronn discloses only the use of an electroscope, which provides an optical indication and is not suitable for use in radioactivity well logging. The invention covered by the Bender claims in issue comprised a new combination of elements and a new mode of operation that was not obvious to those skilled in the art at the time Bender filed his application.

22.

The application for reissue of the Bender patent was filed in the Patent Office less than two years after the issuance of the original Bender patent, and hence within the period during which application might then be made for a reissue patent enalrging the scope of the claims of the original patent. The specification of the Bender reissue is substantially identical with that of Bender's original patent, both of which contain a full and complete disclosure of natural gamma ray well logging and apparatus for performing the same.

23.

The subject matter of the Bender reissue claims in issue was explicity disclosed and taught but was not claimed in his original patent No. 2,133,776. The oath of Bender which accompanied the reissue application specifically stated that the reason for the reissue was to obtain claims directed to subject matter disclosed but not claimed in the original patent. The invention covered by said reissue claims in issue is the same invention as disclosed by the original patent as required by the Statute.

24.

The defenses against the Bender reissue patent of inoperability, lack of inadvertence, accident or mistake in filing the reissue, indefiniteness and unreasonable delay in filing the application for reissue are not supported by any probative evidence in this case.

25.

There is no evidence that Bender ever authorized or approved the cancellation of claims 7 and 8 from his original application or that said cancellation was agreed upon at any conference at which Bender or his then

attorney was present or that by said cancellation said attorney intended to abandon subject matter subsequently covered by the Bender claims in issue. In his depositions, John C. Bender made no statement that can properly be interpreted as an admission that he did not invent natural gamma ray logging, or that claims 7 and 8 of his original application were cancelled with his approval, or that said cancellation was intended as an abandonment of his natural gamma ray logging invention. Mr. Bender has never disclaimed any of the subject matter of any of the claims of his reissue patent, but on the contrary by his oaths in his original application and in his application for reissue, he specifically swore that he believed himself to be the original, first and sole inventor of natural radioactivity logging as claimed.

26.

The invention of the Bender patent is not the mere observation of a natural process or merely the use of an element found in nature. The Bender patent is not an attempt to claim or monopolice a natural phenomenon, nor is the only difference between the disclosure of the Bender patent and the prior art a natural phenomenon. The Bender patent teaches the lowering of a radiation detector and other apparatus into a well for producing and transmitting signals to the surface which are recorded in correlation with depth to produce a log of the lithology of the subsurface formations. Claims 14, 15, 19 and 20 describe a complete process of gamma ray logging, and claim 16 describes a complete apparatus for practicing that process.

27.

The methods and apparatus for natural gamma ray logging defined by the claims in issue of the Bender

patent are of great utility and value; they were not obvious, but were the result of invention by the patentee; and they are not anticipated by, but displayed substantial inventive advance over, the prior art in evidence. In obtaining said patent, Bender complied with all the laws and rules then in force; the patent was duly and legally issued; and McCullough Tool Company has infringed the claims thereof in issue.

28.

The only source of primary radiation specifically disclosed by Bender in his application as originally filed was an X-ray tube. This taught that the primary radiations were X-rays. No one in the art of radioactivity well logging has commercially utilized an X-ray source of primary radiation.

29.

It was known prior to Bender's invention to utilize a Geiger-Muller counter and an amplifier to determine the radioactivity of substances in surface operations. In such surface operations said elements function in the same manner as in radioactivity well logging.

30.

Prior to the date of the original Bender Patent No. 2,133,776, scintillation counters were known to be the equivalent of Geiger counters as radiation detectors for the detection of gamma rays by converting incident gamma rays into corresponding electrical signals, which can then be measured as an indication of gamma ray intensity. This is shown by Johnston Patent No. 893,244 (WSI Ex. 18) and the work of Von Meyeren (McCullough Ex. 14) and RCA (WSI Ex. 19, T-2).

31.

Prior to the time Bender filed the application for his original Patent No. 2,133,776 and prior to Bender's making the application for reissue Patent No. 23,226, in suit, Bender had studied and was familiar with the publication "Elements of Geophysics" by Ambronn and translated by Cobb. (McCullough patent Exhibit 40.)

Findings Directed Primarily to
Fearon Patent No. 2,308,361

32.

The application for Patent No. 2,308,361 hereinafter sometimes referred to as the Fearon '361 patent was filed by Robert Earl Fearon on November 10, 1938 and was issued to Well Surveys, Inc. on January 12, 1943. The claims of this patent are specifically directed to and cover neutron logging as herein defined. Claims 2 and 3 are in issue.

33.

While the Bender invention of natural gamma ray logging produced valuable information as to the types of formations in the bore hole, there still remained a pressing need in the oil industry for more information concerning said formations. In particular, there was an urgent need for a log which would complement the Bender natural gamma ray log and give an indication as to the porosity and possible oil content of the inaccessible subsurface formations. Fearon was the first to disclose and teach neutron logging which was pioneered by WSI and Lane-Wells and was introduced as a commercial service by 1942.

34.

Natural gamma ray logging is a passive type of logging in that it measures and utilizes something that

exists because of its own natural action. Neutron logging, on the other hand, is an active type of logging in that it measures and utilizes the results of irradiating the formations with neutrons. The natural gamma ray log shows the presence of formations of a lithologic type which can contain oil. The neutron log tells whether or not a particular formation which could contain oil contains any fluid, although it does not tell whether that fluid be water or oil.

35.

While neutron logs and gamma ray logs are both obtained by a form of radioactivity well logging, they are quite dissimilar. The neutron log is a new and useful result never before obtained prior to the invention thereof by Robert E. Fearon as disclosed and claimed in the Fearon '361 patent.

36.

Each of the Fearon '361 claims in issue is limited to a method or apparatus for bombarding subsurface formations with neutrons and measuring *in situ* radiations emitted by the formations as a result of said bombardment, as distinguished from measuring gamma rays naturally emitted by said formations. This includes the measurement of whatever radiations return to the detector as a result of the neutron bombardment of the formations. Said claims in issue recite a new combination of elements and a new mode of operation.

37.

The McCullough neutron logging apparatus as shown on page 2A of WSI Exhibit No. 10 and WSI Exhibit No. 11 (A, C and D) contains each and every element of apparatus claim 3 of Fearon '361. Reference to said exhibits and the evidence shows that the method

of neutron logging used by McCullough comprises bombarding subsurface formations with neutrons and measuring *in situ* radiations emitted by the formations as a result of said bombardment and thus includes each and every step recited in method claim 2. Each of the Fearon '361 claims in issue reads directly on the McCullough method and apparatus. Said method and apparatus of McCullough accomplish the same result in substantially the same way as the Fearon method and apparatus and are the full equivalent thereof. Each of the Fearon claims 2 and 3 has been infringed by McCullough each and every time it performed a neutron logging operation prior to the expiration of the Fearon '361 patent.

38.

The scintillation counter utilized in the McCullough neutron logging apparatus is a detector of radiations and is used to measure radiations from the formations as a result of neutron bombardment of the formations. Geiger counters, scintillation counters and ionization chambers are all detectors of radiation and each may be made sensitive to either gamma rays or neutrons. It is a matter of choice as to which type of detector is used in performing neutron logging of a particular species, i. e., neutron-gamma ray logging or neutron-neutron logging. The resulting logs are substantially the same regardless of whether the detector is a Geiger counter, scintillation counter or ionization chamber and are produced in substantially the same manner. The scintillation counter used by McCullough in its neutron logging operations performs no different function from that performed by the ionization chamber of Fearon, the modes of operation are the same and they are full equivalents in said logging operations. None of the

Fearon '361 claims in issue is limited to an ionization chamber or to any specific type of radiation detector, nor is any such limitation demanded by the prior art or by the proceedings in the Patent Office.

39.

Although a scintillation counter may be used to determine the energy spectrum of radiations resulting from neutron bombardment, as with the McCullough Scintillation Spectrometer, McCullough Tool Company in its conventional neutron logging operations does not determine the energy spectrum of the radiations measured. The McCullough neutron log is a measure of the number per unit of time of returning fast neutrons.

40.

Prior to the invention of the Fearon '361 patent, it had never been known or suggested to bombard the formations of a bore hole with neutrons and measure the resulting radiation. The Fearon '361 patent fully discloses this process, including the detection of either neutrons or gamma rays, or both, impinging on the subsurface tool. The invention disclosed and claimed in the Fearon '361 patent produced a new and beneficial result never before attained. Neutron logging as disclosed and claimed in the Fearon patent '361 was the first practical and the first commercial use of a neutron source.

41.

The substitution by Fearon of a neutron emitting source for the gamma ray emitting source or the X-ray emitting source disclosed in the Bender patent was not obvious to those skilled in the art and amounts to invention.

42.

The invention of the Fearon '361 patent is not the mere observation of a natural process or merely the use of an element found in nature. The Fearon '361 patent is not an attempt to claim or to monopolize a natural phenomenon, nor is the only difference between the disclosure of the said Fearon patent and that of the Bender patent a natural phenomenon. The Fearon '361 patent teaches the lowering of a source of neutrons into a well and apparatus for utilizing the neutrons so produced to bombard the formation surrounding the well and for measuring radiation passing from the formation to the subsurface tool as a result thereof. Claim 2 of Fearon '361 describes a complete process of neutron logging, and Claim 3 describes a complete apparatus for practicing that process. Neither was obvious to those skilled in the art at the time Fearon filed the application for his '361 patent.

43.

The methods and apparatus for neutron logging defined by the claims in issue of the Fearon '361 patent are of great utility and value; they were not obvious, but were the result of invention by the patentee; and they are not anticipated by, but displayed substantial inventive advance over, the prior art in evidence. In obtaining said patent, Fearon complied with all the laws and rules then in force; the patent was duly and legally issued; and McCullough Tool Company has infringed the claims thereof in issue.

44.

The invention of the Fearon patent was made subsequent to the invention of Bender as set forth in the Reissue Patent No. 23,226. Neutron sources *per se* were known prior to the invention of the Fearon '361 patent.

Findings Directed Primarily to
Fearon Patent No. 2,390,433

45.

The application for Patent No. 2,390,433 was filed by Robert Earl Fearon on March 25, 1940 and issued to Well Surveys, Inc. on December 4, 1945. This patent is hereinafter sometimes referred to as the Fearon '433 patent. Claims 1, 4, 5, 10 and 13 are in issue.

46.

The Fearon '433 patent discloses and teaches methods and apparatus for simultaneously but separately measuring with a single logging tool both gamma rays and neutrons impinging upon the tool from the formations surrounding the well bore. The claims in issue cover methods and apparatus for the simultaneous recording, on a single chart in correlation with depth, of both a natural gamma ray log as disclosed and claimed in the Bender Reissue Patent No. 23,226 and a neutron-neutron log as disclosed and claimed in Fearon Patent No. 2,308,361. This system of logging is referred to in the trade as dual logging or simultaneous logging.

47.

When gamma ray and neutron logs are run separately, errors in depth measurements make inaccurate correlation of the logs with each other. Accuracy of such correlation is achieved by making both logs simultaneously with the respective radiation detectors spaced a fixed distance apart in the same logging tool, even though there may be errors in the depth measurements. This result was not known before the invention disclosed and claimed in Fearon '433.

48.

The McCullough dual logging apparatus as illustrated on page 3A of WSI Exhibit No. 10 and WSI Exhibit No. 11 (A, C and D) comprises a single tool containing a neutron source, a gamma ray detector and a neuton detector all in spaced relation, and circuitry for sending the respective signals up the cable to produce separate but correlated gamma ray and neutron logs on the same chart. The McCullough detectors are not differentially shielded. Although differing in the particular detectors used, the Fearon and McCullough tools accomplish the same beneficial result.

49.

If valid, apparatus claims 4 and 5 of the Fearon '433 patent are literally infringed by the McCullough apparatus since it contains each and every element of these claims arranged in the same manner to do the same work and achieve the same result. Claims 4 and 5 are not limited to any particular spacing between the detectors nor to any particular circuitry. If valid, method claims 1, 10 and 13 are also infringed by McCullough, since in the use of its apparatus shown on page 3A of WSI Exhibit No. 10 and in WSI Exhibit No. 11 (A, C and D), the McCullough method includes each and every step of said claims. By having its two radiation detectors spaced only about six feet apart in the same subsurface tool, the McCullough system separately measures the natural gamma rays and neutrons simultaneously at substantially the same level in the well.

50.

The Fearon '433 patent was the first to disclose and claim methods and apparatus for simultaneously and separately performing gamma ray and neutron log-

ging with the same tool. No prior patents or publications have been urged by McCullough against this patent other than those which were considered by the Patent Offic. None of said patents or publications anticipates any of the claims in suit of the Fearon '433 patent.

51.

In addition to the broad showing of simultaneous logging, the Fearon '433 patent discloses particular radiation detectors (differentially shielded ionization chambers) and means for electrically combining the outputs of the separate radiation detectors to effect more accurate measurements of gamma rays and neutrons. These elements are recited in some of the claims of the Fearon '433 patent not here in issue, but none of the claims in issue is so limited. There is nothing in the file wrapper of the '433 patent to indicate that either Fearon or the Examiner considered any particular type of radiation detector, or combining means, or the mathematical equations disclosed in the specification to be an essential feature of the invention. Allowance of the claims in issue was not based on any such limitations, and none of said claims is so limited.

52.

While the methods and apparatus defined by the claims in issue of the Fearon '433 patent have been a commercial success in producing a different and more desirable result in making a neutron log and a gamma ray log simultaneously, said logs being correlated with depth and with each other and therefore reducing the probability of error, nevertheless this does not represent invention in the light of the prior art, for such a combination of two separate radiation detectors in the

same subsurface tool was obvious to those skilled in the art at the time of the Fearon '433 application. No invention was or could be involved in merely combining in axially spaced relation in one tool a natural gamma ray logging radiation detector as taught by the Bender Patent No. Re. 23,226 and a neutron logging radiation detector as taught by Fearon's earlier Patent No. 2,308,361 and transmitting the signals from said detectors to the surface over the same cable to be simultaneously recorded on a single chart. Fearon being then an employee of WSI was obviously skilled in the art and fully conversant with both gamma ray and neutron logging equipment and with the obvious necessity of preventing interference of one measurement with the other.

Findings Directed Primarily to
Swift Patent No. 2,554,844

53.

The application for Patent No. 2,554,844 hereinafter referred to as the Swift Patent, was filed by Lawrence M. Swift on March 22, 1946 and issued to Well Surveys, Inc. on May 29, 1951. Claims 1 to 6 inclusive are in issue.

54.

Since radioactivity well logs are measurements of radiation as a function of depth, the depth measurement is just as important as the radiation measurement. If any section of the radioactivity well log is not a faithful record of the radiation measurement with respect to the depth thereof, at least that section of the log is useless.

55.

Almost from the start of the radioactivity well logging industry and certainly as soon as deep holes were

being logged, the industry was plagued with the problem of accuracy of depth measurements due to unpredictable cable stretch, intermittent binding of the logging instrument in the well bore and other causes. This problem was first solved for cased wells by the invention of the Swift patent which met with immediate and substantial commercial success.

56.

The Swift patent discloses and claims apparatus for identifying and locating formations penetrated by a cased well bore by measuring a physical property of said formations with respect to permanent markers located along the well bore. Means are provided for obtaining indications (signals) of the passage of an exploring tool past the casing collars simultaneously with obtaining signals upon measurement of radiation from the formations, combining said signals and transmitting them together to the surface, and simultaneously recording said signals to provide a log in which the radiation measurements are accurately correlated with depth by the casing collar record. The casing collar indications or signals are primary depth measurements made at the time and place of the radiation measurements, said measurements being tied together at the place of measurement by combination of the separate signals. The use of these primary depth measurements produces a log which is essentially different from a radiation log wherein depths are determined by secondary measurements made at the surface, as by a measuring wheel, far from the place in the well where the radiation measurements are made.

57.

The Swift patent is concerned with utilizing the casing collars which are permanently fixed in a cased

well as bench marks, making radiation measurements relative to the positions of these bench marks, and recording the radiation measurements and the indications of the bench marks simultaneously to provide a radioactivity well log in which the radiation measurements are accurately recorded as a function of depth as indicated by the casing collar indications. This is a new combination of elements which produces a new and useful result. The elements cooperate to produce a unitary result and are not a mere aggregation as urged by McCullough.

58.

Two embodiments of the Swift invention are described in the specification. One of these embodiments uses a one pen recorder as illustrated in the patent drawing and on page 4 of WSI Exhibit No. 10. This embodiment was never used commercially by WSI or Lane-Wells. The second embodiment of the Swift invention uses a two pen recorder, as illustrated on page 5 of WSI Exhibit No. 10. This second embodiment was used by Well Surveys and Lane-Wells for many years. None of the claims of the Swift patent is restricted either to a one pen recorder or to a two pen recorder; the term "a recorder", as used in the claims, includes both a one pen recorder and a two pen recorder.

59.

The Swift patent discloses a combination of a casing collar locator with a radiation detection system in which the casing collar signal and the radiation signal are electrically associated so that when the casing collar signal is imposed upon the radiation detection circuit, the radiation signal is interrupted. This interruption system is an illustration of but one of several available

means for transmitting the casing collar signal and the radiation signal over the same cable, and none of the claims of the Swift patent is limited to this system. Original claim 7 of the application as filed was so limited, but was cancelled during prosecution of the application, thereby indicating that this particular means was not deemed critical either by Swift or by the Patent Office. There is nothing in the file wrapper that requires any of the claims to be so limited.

60.

In the Swift invention, the casing collars are located by magnetic means responsive to changes in the magnetic flux path caused by the casing collars to produce the casing collar indication or signal. Radiation from the formations is detected by a radiation detector to produce the radiation signal. A common transmission system is used for transmitting the casing collar signals and the radiation signals to the surface recording equipment. None of the claims of the Swift patent is limited to any particular type of magnetic collar locating means or radiation detector, nor is there any indication in the Swift file wrapper that such specific means or detector was a necessary part of the invention.

61.

The McCullough Catalog, pages 3280 and 3297, WSI Exhibit No. 12-I, the McCullough drawings, WSI Exhibit 11(A, C and D), as well as a comparison of pages 4 and 4A and pages 5 and 5A of WSI Exhibit No. 10, show that both structurally and functionally the McCullough logging apparatus with casing collar locator is substantially the same as that shown in the Swift patent. The McCullough apparatus consists of a subsurface instrument containing a scintillation counter

which independently produces signals proportionally related to the radiation from the formations, a magnetic casing collar locator which independently produces indications or signals indicative of the proximity of casing collars, a subsurface amplifier into which both of said signals are fed, the casing collar signal being applied to the last stage of said amplifier thereby superimposing the collar signal on the radiation signal and thereby combining the signals, the combined signals being introduced from the amplifier into the transmission system and transmitted over the same conductor to the surface where they are recorded by the same recorder using separate pens. Each and every element of claims 1 through 6 of the Swift patent is employed in the McCullough apparatus in the same way as disclosed by Swift to achieve the same result. Each of the Swift claims in issue reads directly upon the McCullough apparatus and has been infringed by McCullough each and every time it performed radioactivity well logging involving the location of casing collars after the Swift patent issued. Casing collars are automatically recorded with any McCullough radiation log run inside casing.

62.

The prior art, and particularly the Ennis patent does not anticipate Swift. The new combination of elements forming the Swift invention and their new mode of operation were not obvious to those skilled in the art at the time the Swift application was filed.

63.

Magnetic casing collar locators and radioactivity well logging systems were separately known long prior to the invention of the Swift patent. It was also old long

prior to the invention of the Swift patent to transmit muliple signals over a common conductor.

64.

The well logging apparatus with casing collar locator defined by the claims in issue of the Swift patent is of great utility and value; it was not obvious, but was the result of invention by the patentee; and it is not anticipated by, but displayed substantial inventive advance over, the prior art in evidence. In obtaining said patent, Swift complied with all the laws and rules then in force; the patent was duly and legally issued; and McCullough Tool Company has infringed the claims thereof in issue.

65.

In the McCullough system utilizing a casing collar locator and a radiation detecting instrument, the casing collar signal does not cause an interruption of the radiation signal.

Findings Directed Primarily to
Fearon Patent No. Re. 24,226

66.

The Fearon reissue patent No. 24,226 is a mere paper patent having found no application in use at any time.

67.

No one ever commercially operated the apparatus as shown and described in the Fearon reissue patent No. 24,226.

68.

Well Surveys, Incorporated, and the patentee Fearon made no use of the apparatus of Fearon reissue patent No. 24,226.

69.

Neither form of apparatus shown in the Fearon reissue patent No. 24,226, i.e., that disclosed in Figure 1 and Figure 8, has ever been operated prior to the institution of this action.

70.

The claims in suit are claims 5, 6, 9, 10 and 11.

71.

Claims 5 and 6 which are original claims of patent No. 2,351,028 must be construed to cover exactly what is shown in the reissue patent No. 24,226, and as thus construed have not been infringed by the McCullough Tool Company.

72.

The reissued claims 9, 10 and 11 of reissue Patent No. 24,226 are void because of unreasonable delay for a period of twelve (12) years in making application for the reissue.

73.

The specification and claims of the original patent No. 2,351,028 did not set forth or describe the use of a "single unit crystal".

Findings Directed Primarily to Pringle et al. Patent No. 2,686,266

74.

On August 10, 1954 United States Letters Patent No. 2,686.266 was issued to plaintiffs, Robert W. Pringle, Kenneth I. Roulston and George M. Brownell for an invention in improvements in radiation detectors and since that date said Robert W. Pringle, Kenneth I. Roulston and George M. Brownell have been

and still are the owners of said Letters Patent No. 2,686,266, subject to an exclusive license to make, use and sell the invention of said Letters Patent granted to the plaintiff, McCullough Tool Company. Claims 1, 2, 5-10, 13, 14, 20-23 are in issue.

75.

Claim 23 of the Pringle et al. Patent No. 2,686,266 is limited to a detector of neutrons and means for measuring their energies and intensities by virtue of proton recoil resulting from the impingement of fast neutrons upon a scintillation phosphor. Neither Well Surveys, Inc. nor Dresser Industries, Inc. has ever used in any commercial operation a phosphor which scintillates in response to fast neutron bombardment by virtue of proton recoil. Neither Well Surveys, Inc. nor Dresser Industries, Inc. has infringed claim 23 of the Pringle et al. Patent No. 2,686,266.

76.

Gamma rays emitted by formations, whether naturally or as a result of neutron bombardment, have energies (wave lengths) characteristic of the elements making up the formation. The relative intensities of gamma rays of various energies coming from a given formation is therefore determined by the relative abundance of the various elements contained in that formation. By selectively measuring the intensities of gamma rays of energies characteristic of particular elements, the abundance of those particular elements contained in the formation is ascertained.

77.

Claims 1, 2, 5 to 10, 13, 14, 20 to 22 of the Pringle et al. patent are limited to scintillation counter apparatus for the determination of energy characteristics of

gamma rays by analysing the pulses generated by the gamma rays to determine energy characteristics either by variation of an integral discriminator setting or by use of a differential discriminator.

78.

Claims 1, 2, 5 to 10, 13, 14 and 20 to 22 of the Pringle et al. patent, when limited as set forth in Finding 77, are valid.

79.

Crystal size is not critical to the invention claimed in the claims in issue of the Pringle, et al. patent.

80.

An integral discriminator with a single fixed level of discrimination cannot be used to measure energy characteristics except to the limited extent which is involved in excluding pulses of amplitude less than the fixed level and receiving and counting pulses of amplitude above the preselected level. This is not a measurement of energy characteristics as the term is used and defined in the Pringle patent.

81.

A fixed integral discriminator used with a scintillation counter including a crystal having a mass of at least 10 grams does not infringe any of the claims in issue of the Pringle patent. Infringement requires a differential discriminator or an integral discriminator with its discrimination level varied.

Well Surveys, Incorporated and/or Dresser Industries, Inc. (substituted for Lane-Wells Company) in the Northern District of Oklahoma and elsewhere in the United States, have made, used and/or operated within the period of six (6) years prior to the filing of

the Complaints herein, and are still utilizing and operating radioactivity well logging equipment employing a subsurface instrument which includes a scintillation counter as the detector of radiations which counter includes a single unit crystal sensitive to gamma rays and having a mass of at least ten grams. Said crystal is optically coupled to a photomultiplier tube and is housed within a light-tight, moisture-proof container in which the crystal is surrounded by reflecting powder whereby the container protects the crystal from moisture deterioration and the powder reflects scintillations produced in the crystal so that they may reach the photomultiplier tube. The mass of the crystal is such that the energies of gamma rays impinging thereon are converted within the crystal to scintillations. The crystal is transparent to its own scintillations, and its thickness is greater than the range of secondary particles produced by the majority of the gamma rays in the crystal. The crystal and photomultiplier tube are utilized in combination with a pulse amplifier, a threshold circuit (i.e., an integral discriminator), a scaler, and a pulse shaper.

83.

The various radioactivity well logging apparatus of Well Surveys, Inc. are shown and described in McCullough Exhibit No. 22. The only apparatus alleged to be infringing are those utilizing scintillation counters, i.e., Series 311, 312, 400, 401 and 403. These are described in the written descriptions of Exhibit 22 identified by these series numbers and are illustrated in the drawings of Exhibit 22 identified as WM1-C, WM2-A, WM3-A, WM4-A, WM5-A, WM6-A, WM7-A, S2816-A and S3211-A. The WSI scintillation counter apparatus is further generally illustrated and de-

scribed in McCullough Exhibit No. 61A. Lane-Wells Company (Dresser Industries, Inc.) has utilized modifications of at least some of the Series 311, 401 and 402 scintillation counter apparatus in performing the Chlorinilog and Cemotron operations illustrated and described in McCullough Exhibits 51B1, 51B2, 51C, 51D and 51E.

84.

A scintillation counter type of gamma ray detector produces individual electrical pulses of sizes proportional to the energies of the respective individual gamma rays detected. In radioactivity well logging the scintillation counter is utilized in conjunction with a discriminator that passes only those electrical pulses of sizes greater than its discrimination level, i.e., an integral discriminator. The discriminator may be set at any desired level of discrimination. Scintillation counters may be used as the radiation detector in making conventional gamma ray logs and neutron logs and, by appropriate modifications, can also be used to make spectral logs. In conventional natural gamma ray, neutron gamma ray, or gamma-gamma logging as performed by the parties with scintillation counters, the discriminator is maintained at a single fixed level to eliminate pulses from noise and low energy gamma rays during the entire measurement.

85.

McCullough has not sustained its burden of proof in showing that any claim in issue of the Pringle patent (claims 1, 2, 5-10, 13 and 20-23) is infringed by any scintillation counter instrument of Well Surveys, Inc. except as used in making that form of Chlorinilog run by Dresser Industries, Inc. which comprises a con-

ventional neutron-gamma ray log made with a scintillation counter at a given discrimination level and a second neutron-gamma ray log made with the scintillation counter at a different discrimination level.

86.

The claims in issue of the Pringle patent, if valid, are limited to spectral measurements, and as applied to radioactivity well logging the claims in issue (except claim 23), if valid, are limited to spectral logging where gamma ray energies are measured. They are not infringed by conventional radioactivity well logging as performed by Well Serveys, Inc. and/or Dresser Industries, such as gamma ray and neutron logging, whether or not scintillation counters are used.

87.

The Cemoton log is a gamma ray-gamma log run by Dresser Industries, Inc. and is used to locate the top of cement in a well.

88.

The Chlorinilog is a log run by Dresser Industries, Inc. to determine the relative presence of chlorine. The Chlorinilog is essentially a comparison of two neutron logs differently responsive to the relative presence of chlorine. When the two logs are plotted side by side, any divergence is indicative of chlorine.

89.

Well Surveys, Inc. and/or Dresser Industries, Inc. has run logs with Series 311, 312, 400, 401, 402 and 403 instruments where a single fixed discrimination level was used and the intensity of all gamma rays above the discrimination level was measured. Such operations were not spectral logging and did not infringe any of the Pringle claims in issue.

90.

The invention of the Pringle et al. Patent No. 2,686,266 was not introduced, imported or made known by Pringle et al. within the United States prior to November 10, 1949, the date when the corresponding Canadian patent application was filed. The earliest effective invention date for the Pringle et al. patent is therefore November 10, 1949.

Findings Directed Primarily to
Martin et al. Patent No. 2,686,268

91.

On August 10, 1954, United States Letters Patent No. 2,686,268 was issued to plaintiffs Philip W. Martin and Robert W. Pringle for a well logging device and since that date plaintiffs Philip W. Martin and Robert W. Pringle have been and still are the owners of said Letters Patent subject to the exclusive license granted to McCullough Tool Company to make, use and sell devices embodying the invention of said Letters Patent. Claims 1, 2, 3, 6, 8, 15-18 are in issue.

92.

In the operation of a scintillation detector system of well logging a problem existed in maintaining the scintillation detector system under a relatively stable condition of temperature throughout the varying high temperature conditions existing in a well.

93.

The Martin, et al. system of temperature control stablized the scintillation detector whereby the same will operate to log wells at temperatures in excess of 350° F.

94.

In oil well logging using a scintillation detector system of radiation detection it is important to the operation that the temprature of the scintillation detector be controlled at a relatively stable temperature throughout the operation.

95.

The claimed invention of the Martin, et al. Patent No. 2,686,268 has had wide commercial success.

96.

The scintillation detector system for oil well logging utilized by defendants, Well Surveys, Incorporated and Lane-Wells Company (Dresser Industries, Inc.) incorporates the same or equivalent elements having substantially the same mode of operation and produces substantially the same results as the device defined by claims 1, 2, 3, 6, 8 and 15 to 18, inclusive, of the Martin, et al. Patent No. 2,686,268, and would constitute an infringement of said claims if they were valid.

97.

A device similar to the apparatus disclosed by the Martin, et al. Patent No. 2,686,268 was first successfully operated in the stabilization of the temprature by radiation detector system in oil well logging in the well of the Union Oil Company out of Los Angeles, California in August 1950.

98.

The Martin, et al. Patent No. 2,686,268 as to claims 1, 2, 3, 6, 8 and 15 to 18, inclusive, is invalid in view of the patent to Miller No. 2,324,103 granted July 13, 1943; the Jackson Patent No. 2,521,294 granted September 5, 1950, and the publication by Louis Wouters entitled, "Solid Counters: Scintillation Counters," W.S.I. Patent Exhibit 19, T-62.

Findings Directed to the Defense of Misuse

101.

Well Surveys, Incorporated, hereinafter called WSI, was incorporated on May 4, 1939. It engaged immediately in research and development of various methods for the logging of oil wells by the detection and reading of radioactivity manifested by strata of the earth penetrated by a bore hole, including both natural emanations and those artificially induced by the logging apparatus. It designed, manufactured, used and sold apparatus for execution of oil well logs by radioactivity readings, and conducted research and experimentation in this field as well as others. This general activity continues to the date of these findings, except that WSI does not execute oil well surveys for others for hire.

At the date of its organization one-half of the stock of WSI was issued to and held by Socony-Vacuum Oil Company, which paid therefor the sum of $100,000.00, and the remainder of its stock was held by Engineering Laboratories, Inc., a corporation, and various individuals, among whom were inventors who had contributed certain patent applications, inventions, research data and apparatus to the enterprise. The stock of WSI was held in this fashion until the winter of 1950-1951, except that Engineering Laboratories, Inc., had disposed of its stock to individuals.

In the winter of 1950-1951 Lane-Wells Company, which was then a licensee of WSI, acquired one-half the stock of WSI from owners thereof other than Scony-Vacuum Oil Company. From the date of this acquisition until a date in 1954, the stock of WSI was held

one-half by Socony-Vacuum and one-half by Lane-Wells.

In 1954 Socony-Vacuum Oil Company sold its one-half of the stock of WSI to Lane-Wells Company, which then became the owner of all of the capital stock of WSI.

In the year 1955 Dresser Industries, Inc., became the owner of all of the stock of Lane-Wells Company and of WSI. On April 30, 1958, Dresser Industries, Inc., liquidated Lane-Wells Company. Since 1955 Dresser Industries, Inc., has been the sole stockholder of WSI. Since April 30, 1958 Dresser Industries, Inc., has provided through its Lane-Wells division the radioactivity well logging services formerly provided by Lane-Wells Company.

102.

At the date of its first contract with WSI, June 11, 1940, and until its liquidation in 1958, Lane-Wells Company was engaged in the business of oil well servicing for hire, rendering various completion services to drillers and operators of oil and gas wells, including logs and surveys of various types, perforating, and from shortly after June 11, 1940, radioactivity well logs. At the time of the first contracting of Lane-Wells with WSI, Lane-Wells was the owner of the Bender patent in suit relating to well logging by radioactivity readings, but conducted no research in the field, did not manufacture apparatus for radioactivity surveys, and held no patents relating to radioactivity well surveying other than the said Bender patent. The business of Lane-Wells consisted of the rendition of well completion services for others for hire.

103.

At the date of first contracting between WSI and Lane-Wells Company, WSI held a number of patents and patent applications relating to radioactivity well surveying, was conducting research and development work relating thereto, and was engaged in the design and manufacture of apparatus for executing well surveys by means of radioactivity readings. Its said patents and patent applications related both to methods for the accomplishment of such readings and to apparatus for the execution of the same.

104.

On June 11, 1940 WSI and Lane-Wells Company entered into a contract whereby WSI licensed Lane-Wells Company under its patents to practice radioactivity well surveying for others for hire. The license so granted was exclusive to Lane-Wells Company except for two limited non-exclusive grants previously given to Socony-Vacuum Oil Company, Inc., and Engineering Laboratories, Inc., and except for a reserved right in WSI to practice the said methods for its own account. A condition of this agreement required Lane-Wells to purchase from WSI all detecting and recording intruments for rendering radioactivity well logging services, including those used in the exercise of the licensed right, together with all equipment and materials having directly to do with radioactivity measurements, as distinguished from accessory equipment such as trucks, winch and cable. A further condition of this agreement was a covenant by Lane-Wells that it would not, during the contract term, engage intentionally in research and development work in radioactivity well logging, but that Lane-Wells would leave such research to WSI, which agreed to and did in fact continue it.

The term of the contract of June 11, 1940 was initially stated to extend to December 31, 1950, and from year to year thereafter unless terminated by notice. By an agreement dated January 1, 1948 the term of this cotract was extended to December 31, 1960, with like provisions for extension absent notice of termination. The said agreement was actually terminated on April 16, 1951, by the terms of a new agreement.

105.

By the agreement of June 11, 1940, Lane-Wells granted WSI a license exclusive except for Lane-Wells itself, under the Bender patent. Such patent was reissued after June 11, 1940, and expired in October of 1955. On April 12, 1956 the right to sue for past infringement of the Bender patent was assigned by Lane-Wells to WSI.

106.

On March 3, 1942 WSI made an additional agreement with Lane-Wells Company whereby a means or method for radioactivity well logging by employment of neutrons, together with other improvements in apparatus were licensed exclusively to Lane-Wells Company (with the same exceptions indicated in (104) above) for the practice of radioactivity well surveying for others for hire. A condition of the license granted by this contract was that Lane-Wells Company should purchase all detecting and recording instruments utilized in rendering radioactivity well logging services from WSI. A further condition of this license was a covenant by Lane-Wells not to engage in research and development work in neutron-gamma ray well logging, but to leave such research to WSI, which agreed to and did in fact continue it.

The term of this agreement was originally stated to expire on December 31, 1950. By a contract dated January 1, 1948 the term was extended to December 31, 1960, thereafter to extend from year to year unless terminated by notice. This contract was likewise actually terminated by the agreement between the same parties dated April 16, 1951.

107.

On July 30, 1945 WSI made another contract with Lane-Wells Company whereby the latter was licensed exclusively (with the same exceptions indicated in (104) above) under WSI patents to practice a means or method for locating casing collars in radioactivity well surveys made for others for hire. This contract was conditioned that Lane-Wells should purchase all detecting and recording instruments utilized in practicing the licensed method from WSI. The term of this license was extended in the same manner and for the same period and was terminated by the same agreement which ended the two preceding contracts between the same parties.

108.

The methods, inventions and apparatus covered by the Bender reissue patent No. 23,226, the Fearon neutron patent No. 2,308,361, the Fearon dual logging patent No. 2,390,433, and the Swift patent No. 2,554,844, all of which are in suit upon claim of infringement, were licensed to Lane-Wells Company under the grants and during the effective periods of the three license agreements described in the preceding findings, and one or more of the said patents were practiced by the said licensee under the terms of each of the said agreements.

109.

During the effective periods of the agreements of June 11, 1940, March 3, 1942, and July 30, 1945 Lane-Wells did purchase all detecting and recording instruments employed in practicing the licensed methods from WSI, and did in fact refrain from conducting research in accordance with such agreements.

110.

On April 16, 1951 WSI made another contract with Lane-Wells Company. Under the terms of this agreement Lane-Wells Company surrendered its exclusive license under the three preceding agreements, and the said earlier agreements were terminated. By the new agreement Lane-Wells received a non-exclusive license under all of the WSI patents, including those in suit, and agreed that WSI might license third parties to the practice of radioactivity well surveying, under its own patents and the Lane-Wells Bender patent, but only upon terms stated in the new WSI-Lane-Wells contract. It was a condition of this agreement that WSI should not license third parties except in one of the alternative forms and upon the terms stated in the agreement of April 16, 1951, except with the consent of Lane-Wells. Such terms required such licenses to be granted only under all of the WSI patents and at royalty rates fixed by the agreement. The two alternative forms of license for extension to third parties were denominated respectively as "Immunity" and "Research,Service and License" agreements, and the precise forms thereof were as set forth in Exhibits A and B to the agreement of April 16, 1951. Under the terms of the 1951 agreement WSI was not free to license less than the whole of its patent package to any

third party, and was not free to negotiate royalty rates less than those stated in its agreement with Lane-Wells, except with consent of Lane-Wells. Under the terms of this agreement no license to manufacture or procure instruments for practice of the licensed methods was granted to Lane-Wells and none was permitted to be granted to research and service licensees, with the effects found in finding (114). The royalty base of licenses permitted to be made by WSI to third parties was required to extend to all radioactivity well surveying whether or not accomplished by a licensed means or method, except as Lane-Wells otherwise consented.

The agreement of April 16, 1951 was stated to continue in force until December 31, 1960 and from year to year thereafter until terminated by notice; but the same was in fact terminated by a subsequent agreement between WSI and Lane-Wells Company dated June 1, 1956.

111.

The 1951 agreement was a substantial change from the 1940, 1942 and 1945 agreements. The 1951 agreement did not restrict Lane-Wells from research in radioactivity well logging, nor did it expressly provide that Lane-Wells should buy its detecting and recording instruments from WSI.

112.

Each of the patents in suit was in fact licensed to Lane-Wells and others pursuant to the provisions of the contract of April 16, 1951, or by standard license agreements made pursuant to its authority, and each of the said licensees practiced one or more of the patents licensed under the said agreements.

113.

Immunity licenses and research and service licenses were granted to third parties by WSI under and pursuant to the agreement of April 16, 1951 and in the forms and upon the terms required by the said agreement. Except as permitted by the express consent of Lane-Wells Company, which was given in certain instances, and until June 1, 1956, WSI granted no licenses to any licensee except under all of its patents and at the royalties stipulated in its contract with Lane-Wells. Until June 1, 1956 licensees were obliged to accept license under all or none of the WSI patents except as special consent was obtained from Lane-Wells.

114.

The practical effect of the research and service license agreements issued pursuant to and in the form required by the contract of April 16, 1951, was to require such licensees to purchase apparatus from WSI for the practice of the means and methods licensed under such agreements. While no express covenant to buy instruments from WSI was exacted in the said research and service license agreements, the form and manner of contracting left such licensees no alternative but to buy required apparatus from WSI.

115.

By its refusal pursuant to contract, to license otherwise than under the alternative package licenses exhibited to the agreement of April 16, 1951, except with consent of Lane-Wells, WSI coerced the acceptance of license under the whole of its patents by prospective licensees. The alternative of seeking different terms at the consent of Lane-Wells Company did not adequately alleviate the coercion exerted upon the li-

cense prospect. This coercion continued and existed until the termination of the 1951 agreement on June 1, 1956.

116.

At and for some time following April 16, 1951 WSI was dominant in the market for the sale of instruments suitable to execute well logs by radioactivity readings. WSI refused to sell its well logging apparatus except to holders of its research and service license agreement. At the time licenses under the WSI patents were first offered to traders other than Lane-Wells, WSI utilized its refusal to sell instruments to induce acceptance by licensees of its research and service license agreement, covering the whole of its patent rights, at an enhanced royalty rate. At June 1, 1956, WSI no longer dominated instrument and apparatus supply for practice of radioactivity well logging, and after that date its refusal to sell its apparatus was not a compelling factor in its license contracting.

117.

Following June 1, 1956 WSI was not dominant in the market for the sale of instruments and apparatus for radioactivity well surveying. After the said date the refusal of WSI to sell its apparatus to others than its research and service licensees was reasonable and did not tend to eliminate competition and did not have an anti-competitive effect.

118.

After June 1, 1956, if the availability of WSI apparatus was an inducement to prospective licensees to accept the research and service license at the 15 per cent royalty, the inducement was not rested upon a patent or patents, but was rested upon the reputation

of the apparatus, the readiness of WSI manufacturing facilities to produce instruments, WSI's services and the benefits of continuous research.

119.

In spring of 1956, WSI effected a decisive change in its patent licensing policy. Pursuant to this change in policy it terminated its agreement with Lane-Wells dated April 16, 1951, it amended its standard forms of license agreement to permit research and service licensees to manufacture or procure instrumentation elsewhere than from WSI, it published notice advising the public that it was prepared to license any or all of its patents on reasonable terms, it wrote letters to all of its existing licensees offering termination of existing agreements and the negotiation of new agreements on reasonable terms, and by such actions accomplished a complete purge of previously existing patent abuses as of June 1, 1956. It also made a new agreement with Lane-Wells which contained no provision limiting the right of WSI to license others or requiring the consent of Lane-Wells to any such license.

120.

After June 1, 1956, WSI has been willing to grant licenses under its patents individually or collectively upon negotiated reasonable terms. While after June 1, 1956, prospective licensees were urged to accept license under one of the package forms of license, this was done as a matter of salesmanship upon the theory that the package would best serve the needs of the licensee. There was no coercion of licensees contracting subsequent to June 1, 1956 to accept license under all of the WSI patents unwillingly.

121.

In the circumstances of this case the provision of WSI research-service and license agreements requiring licensees to grant back non-exclusive licenses under new inventions in the field of radioactivity well logging, with permission to WSI to sublicense such new inventions to its licensees did not have an anti-competitive effect, but tended to bring about a wider distribution of the use of new inventions.

122.

While the royalty base employed in the standard license agreements made by WSI after June 1, 1956 included or purported to include operations covered by the expired Bender patent, the extension of the royalty base to cover practice of expired patents was not coerced, after June 1, 1956, but was voluntary upon the part of the licensees, who were offered a real alternative by WSI's offer to grant a license under any individual patent or patents upon negotiated terms.

123.

The contracts and agreements, including amendments and terminations thereof which are included as items numbered 1 through 51 in the two Books of Contracts stipulated in the record by the parties, and likewise the certain contract which is marked as McCullough Misuse Exhibit 507-G, are found to have been made by the parties who purported to execute the same.

124.

The provision of WSI's standard form agreements with regard to termination or extension of the license on a sale by the licensee of the instruments did not forbid the licensee to sell the instruments, but were ap-

propriate provisions to protect WSI's rights on termination.

125.

No evidence was presented to sustain the charge that WSI or Lane-Wells intended by their contracting to fix prices of well logging services to third parties, or that their contracting had such effect.

126.

From April 16, 1951 until September 29, 1958 WSI refused to sell its radioactivity well logging apparatus to anyone except to its research service licensees. At and after September 29, 1958, WSI offered to make its said apparatus available also to holders of its revised immunity license which was also a package license, including all unexpired WSI radioactivity well logging patents applied for prior to January 1, 1958.

127.

WSI has continued to the date of this finding to grant licenses in which the royalty base is all of the licensee's receipts from radioactivity well logging operations, including those covered by the expired Bender and Fearon neutron patents, except where the licensee has accepted WSI's offer to grant a license on an individual patent basis or on some other narrower basis. WSI continues to the date of this finding to receive royalty payments from one or more of its licensees calculated on a royalty base which includes receipts of the licensee from operations covered by the said expired Bender and Fearon patents.

128.

The Swift Patent No. 2,554,844 is not invalid because of prior public use by Well Surveys, Inc., its li-

censee Lane-Wells Company or anyone if privity or connected with said parties or the inventor, L. M. Swift. All use prior to March 22, 1945 of the invention covered by the Swift patent was experimental only and the patentee was in good faith in carrying on the experimental work that was done with the tool or appratuas covered by said patent.

129.

There was only one tool covered by said Swift patent in use prior to the crucial date of March 22, 1945, and there were improvements made in said tool from time to time. The patentee might well have concluded before the experimental work was finished that he had seen enough, but it was not undersirable nor any indication of lack of good faith, that the precautions be taken that were taken. The use by Lane-Wells Co. of the Swift Casing Collar Locator assembled in radioactivity logging Instrument No. 225 assigned to truck No. 122 and later to truck No. 131 in wells of customers until sometime in the month of February 1945, was in the Houston District of the Gulf Coast area and later in February, said tool No. 225 with the Swift collar locator assembled therein and truck 131 were moved into the New Iberia District where different well conditions were encountered and the experimentation was continued there.

130.

The documentary evidence discloses repeated references by A. B. Winter and others to the Swift tool as being experimental in character, and while this is not conclusive, such references of these people made back in 1944 and 1945 when there was no reason to anticipate this litigation should be accorded great weight in

determining what was in their minds at that time and as to their good faith in continuing their experiments with said tool prior to March 22, 1945.

131.

There were no efforts to sell the Swift tool or the use of said tool to customers prior to March 22, 1945. The tool was used with permission of customers and payment was received in that the tool was used in connection with the regular radioactivity logging service made available to the customer, but there was no extra charge made nor has there ever been any extra charge made for the use of the Swift invention as a part of said radioactivity logging service. The use to which the Swift apparatus was finally put as sales media was to represent to the customers that they were getting more for their money when they transacted business with Lane-Wells and got the benefit of the additional information disclosed on the log by the use of the combination of collar locator and radioactivity logging apparatus covered by the claims of the Swift patent.

132.

The use prior to March 22, 1945 by Oil Well Water Locating Company and others of various forms of tools and equipment in performing the Stratagraph logging service was not a prior public use of the invention covered by the claims of the Swift patent No. 2,554,844.

133.

The use by Schulumberger Well Surveying Corp. of various forms of tools and equipment in performing its L.R.M. (Locating Radioactive Markers) service prior to March 22, 1945 was not a prior public use of the invention covered by the claims of the Swift Patent No. 2,554,844.

Upon the foregoing findings of fact the Court hereby enters the following

Conclusions of Law.

1. This Court has jurisdiction of the subject matter of these actions and of the parties hereto under the patent Laws of the United States.

2. The Bender Reissue Patent No. 23,226 as to claims 14, 15, 16, 19 and 20 thereof is good and valid in law.

3. Claim 16 of the Bender Reissue Patent No. Re. 23,226 has been infringed by the manufacture, use and sale by McCullough Tool Company of apparatus for performing natural gamma ray logging and claims 14, 15, 16, 19 and 20 of said patent have been infringed by all of the natural gamma ray logging operations performed directly or indirectly for hire by the McCullough Tool Company prior to the expiration of said Bender patent.

4. The Fearon Patent No. 2,308,361 as to claims 2 and 3 thereof is good and valid in law.

5. Claim 3 of the Fearon Patent No. 2,308,361 has been infringed by the manufacture, use and sale by McCullough Tool Company of apparatus for performing neutron logging and claims 2 and 3 of said patent have been infringed by all of the neutron logging operations performed directly or indirectly for hire by the McCullough Tool Company prior to the expiration of said Fearon patent.

6. The Fearon Patent No. 2,390,433 as to claims 1, 4, 5, 10 and 13 thereof is invalid and void as failing to define invention over the prior art since the subject matter thereof would have been obvious to a person having ordinary skill in the art.

7. If valid, claims 4 and 5 of Fearon Patent No. 2,390,433 would have been infringed by the manufacture, use and sale by McCullough Tool Company of apparatus for performing gamma ray and neutron logging simultaneously and, if valid, claims 1, 4, 5, 10 and 13 of said patent would have been infringed by all well logging operations performed by McCullough Tool Company directly or indirectly for hire wherein a gamma ray log and a neutron log were obtained simultaneously with the same subsurface logging tool.

8. The Swift Patent No. 2,554,844 as to Claims 1 to 6 inclusive thereof is good and valid in law.

9. Claims 1 to 6 inclusive of the Swift Patent No. 2,554,844 have been infringed by the manufacture, use and sale by McCullough Tool Company of apparatus for simultaneously making radioactivity measurements and locating the casing collars in a cased well and by all radioactivity well logging operations performed directly or indirectly for hire by McCullough Tool Company wherein radiation measurements and casing collar locations were made simultaneously with the same subsurface logging tool.

10. The Fearon Reissue Patent No. Re. 24,226 is good and valid in law as to claims 5 and 6 thereof, but reissue claims 9, 10 and 11 of said patent are invalid and void for laches in filing the application for reissue.

11. The Fearon Reissue Patent No. Re. 24,226 is a mere paper patent, and claims 5 and 6 thereof must therefore be construed to cover exactly what is shown in said patent and as so construed, said claims have not been infringed by the McCullough Tool Company.

12. The Pringle et al. Patent No. 2,686,266, as to claims 1, 2, 5-10, 13, 14, 20, 21 and 22 thereof, is good and valid in law, but only if limited to scintillation counter apparatus used for the determination of energy characteristics of gamma rays by analyzing the electrical pulses generated by the gamma rays to determine energy characteristics either by variation of an integral discriminator setting or by use of a differential discriminator.

13. Claims 1, 2, 5-10, 13, 14, 20, 21, and 22 of the Pringle, et al. Patent No. 2,686,266 have not been infringed by any apparatus made, used or sold by Well Surveys, Inc., Lane-Wells Company or Dresser Industries, Inc., except as used by Dresser Industries, Inc. in making that form of Chlorinlog which comprises a conventional neutron-gamma ray log made with a scintillation counter at a given discrimination level and a second neutron-gamma ray log made with the scintillation counter at a different discrimination level.

14. Claim 23 of the Pringle et al. Patent No. 2,686,266 has not been infringed by any apparatus made, used or sold by Well Surveys, Inc., Lane-Wells Company or Dresser Industries, Inc.

15. The Martin et al. Patent No. 2,686,268 as to claims 1, 2, 3, 6, 8, 15, 16, 17 and 18 is invalid and void as failing to define invention over the prior art.

16. If valid, claims 1, 2, 3, 6, 8, 15, 16, 17 and 18 of the Martin et al. Patent No. 2,686,268 would be infringed by the manufacture and sale by Well Surveys, Inc. and the sale and use by Lane-Wells Company and Dresser Industries, Inc. directly or indirectly for hire, of the scintillation counter radioactivity well logging apparatus in which refrigeration means in the subsurface

tool is used for stabilizing the temperature of the scintillation counter.

17. Except as limited in time by Conclusion of Law No. 23, Well Surveys, Inc. is entitled to judgment against McCullough Tool Company for damages, to be assessed following an accounting, for infringement of Patents No. Re. 23,226, No. 2,308,361 and No. 2,554,844, and for an injunction in usual form against further infringement of Patent No. 2,554,844. Said accounting and injunction should be stayed pending appeal if any in either of these actions.

18. The individual parties Pringle, Roulston and Brownell and their licensee McCullough Tool Company, as their interest may appear, are entitled to judgment against Dresser Industries, Inc. for damages, to be assessed following an accounting, for infringement of Patent No. 2,686,266 and for an injunction in usual form against further infringement of said patent. Said accounting and injunction should be stayed pending appeal if any in either of these actions.

19. The first cause of action (for declaratory relief) alleged in the amended complaint in Civil Action No. 3956 should be dismissed as to all patents of Well Surveys, Inc. mentioned therein except those patents as to which a dismissal has heretofore been entered and except those patents hrein adjudicated as set forth in the foregoing conclusions of law.

20. There was no public use of the invention of the Swift Patent No. 2,554,844 prior to March 22, 1945.

21. The Court has jurisdiction of the parties and of the subject matter presented upon the charge of McCullugh Tool Company that Well Surveys, Incorporated has misused its patents.

22. Well Surveys, Incorporated misused its patents in suit for the period beginning June 11, 1940 and continuing until June 1, 1956, in violation of the policy of the United States relating to the grant, holding and exploitation of patents.

23. By reason of the misuse of its patents Well Surveys, Incorporated is precluded and barred from any recovery or relief against McCullough Tool Company for infringement of the patents in suit occurring prior to June 1, 1956.

24. Well Surveys, Incorporated has not misused its patents since June 1, 1956.

25. In view of the purge found to have been effected by Well Surveys, Incorporated as of June 1, 1956, the said corporation is entitled to enforce its valid patents against infringement occurring subsequent to the said date, notwithstanding the misuse found to have existed prior thereto.

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In the Supreme Court of the United States

OCTOBER TERM, 1965.

No. 366.

McCULLOUGH TOOL COMPANY, *et al.*,
Petitioner,

vs.

WELL SURVEYS, INC. *et al.*,
Respondent.

BRIEF OF RESPONDENT, WELL SURVEYS, INC. (AND DRESSER INDUSTRIES, INC.) IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI.

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OPINIONS BELOW.

The opinion of the Court of Appeals for the Tenth Circuit is reported at 343 F. 2d 381, and appears on pages 1a to 57a of the Appendix to the Petition (hereinafter cited as "App."). The findings of fact and conclusions of law of the United States District Court for the Northern District of Oklahoma are reported at 199 F. Supp. 374, and appear on pages 61a through 117a of the Appendix.

* While this case was pending in the Tenth Circuit Court of Appeals, the assets and liabilities of Well Surveys, Inc., including all patents owned by it and its interest in the present case, were transferred and assigned to its parent corporation, Dresser Industries, Inc., which was also a party to this case. For simplicity of reference, the name Well Surveys, Inc. will be used in this brief to refer to both Well Surveys, Inc. and Dresser Industries, Inc.

JURISDICTION.

The jurisdictional requisites are adequately set forth in the Petition.

QUESTIONS PRESENTED.

Respondent disagrees most emphatically with the statement of Questions Presented in the Petition.

1. Question 1 as stated by Petitioner is not presented by the record. There is no showing of any effort to extend the monopoly of expired patents. The fact is merely that Respondent, except where otherwise requested by a licensee, used the licensee's total receipts from radioactivity well logging as a royalty base for determining the royalty charged for the patents actually licensed. Nor is there any showing in this case of inclusion in a royalty base of operations covered "only" by expired patents. The record shows that, even after expiration of the Bender patent on the broad method of natural gamma ray logging, Respondent's unexpired patents still covered methods, combinations and equipment normally used in this type of logging theretofore covered by Bender as well.

Question 1 was correctly stated by the Court of Appeals as follows (App. 53a):

> "The question thus presented is whether a license agreement covering a package of patents, voluntarily entered into by the parties, is unlawful by reason of the fact that the royalties payable thereunder are based upon the licensee's overall operations and upon a package of patents, some of which have expired or will expire during the effective period of the agreement."

As we shall show, the Court of Appeals correctly answered this question in the negative on the authority of *Automatic Radio Co. v. Hazeltine*, 339 U. S. 827.

2. The factual assumptions embodied in Petitioner's statement of its Question 2 are also totally incorrect. We believe that the following, paraphrased from the Court of Appeals opinion (App. 50a), is a proper statement:

> Is the finding of the District Court that Respondent had discontinued its prior misuse and purged itself as of June 1, 1956 supported by the record?

3. Questions 3 and 4, directed to the patent issues, similarly assume facts contrary to the evidence. Each of said questions is abstract, and whether it be answered in the affirmative or the negative, the answer cannot affect the decisions below. Having lost in both the District Court and the Court of Appeals on the facts *as they are*, Petitioner now seeks to have this Court reopen the case on a set of hypothetical facts.

Question 3 queries whether 35 U. S. C. 112 changed the alleged pre-existing law by expanding the doctrine of equivalents to include ingredients not known to be equivalents at the date of Plaintiff's patent but invented thereafter. This question is completely unsupported by the facts in this case, since all of the ingredients of the Petitioner's infringing device were in fact well-known long prior to the date of the Swift patent as equivalents of the ingredients described in said patent.

4. Question 4 queries whether 35 U. S. C. 103 can be construed to impart patentability to claims for a combination of old elements where the whole does not in some way exceed the sum of its parts. This question likewise is not properly before this Court, since, as the District Court found and the Circuit Court affirmed, the new combination of old elements comprising the Swift patent produced

a new result not achieved by the old elements operating separately. Obviously, therefore, the whole exceeds the sum of its parts.

CONSTITUTIONAL PROVISIONS AND STATUTES INVOLVED.

These provisions are adequately set forth in the Petition.

STATEMENT OF THE CASE.

1. THE PATENT ISSUES.

Since Petitioner's statement of the case on the patent issues is incomplete and in some respects inaccurate, we here briefly restate the facts as to the patents in suit, and particularly as to the Swift patent.

The three patents in suit, Bender (R. 1100), Fearon (R. 1105) and Swift (R. 1109) relate to radioactivity well logging, which is a process of measuring in a well the radioactivity of the formations or strata at various depths and recording at the surface those measurements in correlation with depth in the form of a graph or log. Radioactivity well logging was the first method to successfully log through well casing and is still the only method available to the oil industry for logging through casing. By measuring the radiations coming from the formations, information is obtained as to the possibility of finding oil in said formations, such information being of great value to the industry in its endless search for oil. The conventional types of radioactivity logging are gamma ray logging in which the intensity of natural gamma rays from the formations traversed by the well are measured, and neutron logging wherein the formations are bombarded with neu-

trons and the intensity of radiations emitted as a result thereof (gamma rays and neutrons) are measured (F. 7-10; App. 65a-67a).

The Bender patent (R. 1100) pioneered the wholly new art of radioactivity well logging. Bender was the first to teach natural gamma ray logging, and his patent discloses apparatus including a tool for traversing the various strata of a well with a radiation detector (a Geiger counter) to produce electrical signals indicative of the natural radioactivity of the strata, transmitting said signals to the surface and there recording them in correlation with depth to produce a log giving information concerning the lithology of the formations. (F. 15; App. 69a, 70a.)

While the Bender invention of gamma ray logging produced much valuable information, there remained a need in the oil industry for still more information concerning the formations and particularly as to their porosity and possible oil content. The invention of the Fearon patent (R. 1105) met this need for additional information by the wholly new process of neutron logging. The Fearon patent taught traversing a well with a tool having a source of neutrons therein for bombarding the formations and a radiation detector (an ionization chamber) to produce electrical signals indicative of the resulting radiations, and sending said signals to the surface for recording in correlation with depth to produce a graph or log of said radiations. (F. 33-35; App. 77a, 78a.)

The Petitioner's methods and apparatus for practicing gamma ray logging and neutron logging using a scintillation counter as the radiation detector were found by both courts below to infringe the Bender and Fearon patents, respectively, the scintillation counter used by Petitioner being held to be in all respects equivalent to the Geiger counter used by Bender and the ionization chamber used

by Fearon. (F. 18, 19, 38; App. 71a, 72a, 79a.) This equivalency was known prior to the date of Bender's original patent issued in 1938. (F. 30; App. 76a.)

Prior to the invention of the Swift patent (R. 1109) which was filed in 1946 and issued in 1951, the radioactivity well logging industry had not been able to solve the problem of accurate depth measurement, and since depth measurement is just as important to a well log as the radiation measurement, the problem was very serious. This problem was first solved by the invention of the Swift patent which met with immediate and substantial commercial success. (F. 54, 55; App. 85a, 86a.)

As the Trial Court found (F. 54-60; App. 85a-88a), and the Court of Appeals affirmed (App. 12a-17a), Swift utilizes the collars connecting successive sections of the well casing as bench marks to indicate depth and thereby produce an improved log. The Swift patent discloses and claims a well logging tool which, when lowered into the well, simultaneously produces radiation signals and collar location signals, combines said signals, transmits them to the surface, and then simultaneously records the signals to provide a log in which the radiation measurements are accurately correlated with depth by the casing collar record. The casing collar signals are *primary* depth measurements made separately at the same time and place as the radiation measurements, the two measurements being tied together at the place of measurement by combining the separate signals. As both courts below held, the resulting log is essentially different from and more accurate than a log wherein depths are determined by secondary measurements made at the surface, separated from the point of radiation measurement by the length of cable in the hole, as was the practice prior to Swift. *This is a new and useful*

result that no prior invention had ever achieved and was the first satisfactory solution of the problem.

In the Swift patent, the casing collars are located by magnetic means, and the specific form of radiation detector illustrated is an ionization chamber. The lower courts found direct infringement of the Swift patent by Petitioner's logging apparatus which uses a scintillation counter type of radiation detector. In Finding 61, the trial court found (App. 89a) that:

> "* * * Each and every element of Claims 1 through 6 of the Swift patent is employed in the McCullough apparatus in the same way as disclosed by Swift to achieve the same result. Each of the Swift claims in issue reads directly upon the McCullough apparatus and has been infringed by McCullough each and every time it performed radioactivity well logging involving the location of casing collars after the Swift patent issued."

The full equivalency of Geiger counters, scintillation counters and ionization chambers for use in radioactivity well logging is set forth in Findings 19 and 38 (App. 72a, 79a). Finding 38 states:

> "Geiger counters, scintillation counters and ionization chambers are all detectors of radiation and each may be made sensitive to either gamma rays or neutrons. It is a matter of choice as to which type of detector is used * * *."

As the Court of Appeals observed, this was proved by Petitioner's own expert witness (App. 36a, 37a). This equivalency of said radiation detectors was known prior to the date of the Bender patent and therefore long prior to both the date of the Swift patent and the date of the Swift application. (F. 30; App. 76a.)

2. THE MISUSE ISSUES.

Petitioner's statement of the case as to the misuse issues is argumentative and, in our view, misleading. Again, we find it necessary to restate the case, at the cost of some repetition.

Well Surveys, Inc. ("WSI"), organized in 1939, was the pioneer in radioactivity well logging—the first system of logging oil wells which could log cased holes. In 1940, it succeeded in interesting Lane-Wells, an established oil well service company, which already owned one radioactivity well logging patent—the Bender patent—but had done nothing with it, in commercializing the new system, under an exclusive license agreement. In 1942, and in 1945, it entered similar exclusive license agreements with Lane-Wells covering later developments in its logging methods.

The lower courts held that these agreements involved patent misuse insofar as they required Lane-Wells to purchase all of its detecting and recording instruments from WSI, and insofar as they prohibited Lane-Wells from engaging in independent research in the radioactivity well logging field.

By 1951, there were at least four strong competitiors —Schlumberger, Perforating Guns Atlas, Halliburton, and McCullough—each of which was engaged in radioactivity well logging with its own manufactured apparatus, and still other companies were interested in entering the business. In that year, after Lane-Wells had acquired a 50% stock interest in WSI, WSI and Lane-Wells canceled their earlier agreements and entered into a new agreement. Under the 1951 agreement, Lane-Wells gave up its exclusive license and received a non-exclusive license, and WSI was authorized to license others under its own patents

and the Lane-Wells Bender patent, in either of two agreed forms.

One of them, entitled "Immunity Agreement," was designed for licensees who wished to do their own research and manufacture their own equipment. This was a bare license to use any of the 50 or more radioactivity well logging patents then issued to WSI or Lane-Wells, with a right to make or have others make logging instruments under such patents, but without any rights to purchase such instruments from WSI or to obtain the results of WSI's continuing research. The royalty under the Immunity Agreement was 5% of the licensee's total charges for radioactivity well logging.

The other authorized agreement was a "Research, Service and License Agreement," at a royalty rate of 15% of the licensee's total charges for radioactivity well logging. This agreement, in addition to granting a license under present and future patents in the field, assured to the licensee the benefits of WSI's continuing research and development work, and a continuing source for procuring instruments incorporating the results of this work.

The District Court found that the 1951 agreement was a "substantial change" from the previous agreements, that it did not restrict Lane-Wells from research, and that it did not expressly require Lane-Wells to buy instruments from WSI (Finding 111, App. 105a). The District Court also stated that whether the 1951 agreement involved any misuse was "a much closer question" (R. 648). Both lower courts held, however, that it did involve misuse in two respects. One was that it required WSI to obtain the consent of Lane-Wells before granting a license to a third party on any other than the two approved forms—even though the record showed that Lane-Wells had freely consented to special licenses and had never refused its consent

(R. 510). The other was that the failure of the 1951 agreement to give a Research Service licensee an express license to manufacture its own instruments in effect compelled the licensee to buy from WSI any instruments covered by WSI patents.

In 1954, Lane-Wells purchased the remaining 50% of the stock of WSI, and in 1955 it was itself acquired by Dresser Industries, Inc. In October, 1955, the Bender patent on natural gamma ray logging expired. However, all of the 70 or 75 other radioactivity well logging patents owned by WSI remained unexpired, and, as shown on page 20 and Annex A of this Brief, these included patents normally used in natural gamma ray logging operations.

By 1956, there were at least a dozen companies doing radioactivity well logging, some licensed by WSI and some not, most of them making their own equipment. The record clearly shows, and the District Court expressly found, that by 1956 WSI no longer dominated the market in instruments and apparatus for radioactivity well logging (Findings 116, 117, App. 107a).

Early in 1956, shortly after its acquisition by Dresser, WSI pursuant to resolutions by its Board of Directors (Ex. 524A, R. 3153) effected what the District Court found to be a "decisive change in its patent licensing policy." As found by the District Court in Finding 119 (App. 108a):

> "In spring of 1956, WSI effected a decisive change in its patent licensing policy. Pursuant to this change in policy it terminated its agreement with Lane-Wells dated April 16, 1951, it amended its standard forms of license agreement to permit research and service licensees to manufacture or procure instrumentation elsewhere than from WSI, it published notice advising the public that it was prepared to license any or all of its patents on reasonable terms, it wrote letters to all of its existing licensees offering termination of

existing agreements and the negotiation of new agreements on reasonable terms, and by such actions accomplished a complete purge of previously existing patent abuses as of June 1, 1956. It also made a new agreement with Lane-Wells which contained no provision limiting the right of WSI to license others or requiring the consent of Lane-Wells to any such license."

Despite Petitioner's assertions to the contrary, the record is clear that WSI's offers to negotiate licenses under any or all of its patents on reasonable terms, and to terminate existing licenses to permit its licensees to negotiate such licenses, were made and fulfilled in good faith. The District Court found in Finding 122 (App. 109a):

"While the royalty base employed in the standard license agreements made by WSI after June 1, 1956, included or purported to include operations covered by the expired Bender patent*, the extension of the royalty base to cover practice of expired patents was not coerced, after June 1, 1956, but was voluntary upon the part of the licensees, who were offered a real alternative by WSI's offer to grant a license under any individual patent or patents upon negotiated terms."

This finding is fully supported by the evidence. The record shows that WSI's reasons for drawing its standard license agreements in "field" or "package" form were convenience in accounting and the fact that many licensees did not know exactly which patents they would need. The

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* We wish to point out that none of the agreements made after October, 1955, granted or purported to grant a license *under* the expired Bender patent. The royalty basis on license agreements made after June 1, 1956 continued to be the licensee's total receipts from radioactivity well logging, except where a narrower base was requested. As previously stated, there were a number of patents still unexpired which were normally used in natural gamma ray logging operations.

record also shows that WSI was willing to, and did, negotiate special licenses with a narrow royalty base whenever a licensee preferred to do so. Thus, Dr. John Buck, WSI's Vice-President and Technical Director, testified (R. 510):

> "Q. Why, if you know, did Well Surveys offer licenses of this field or package form?
>
> A. Well, it is an easy way of accounting, was one reason, and the other is that in many cases companies were not sure of what they did really want. Our thought was that if they had the whole group of licenses or patents, of course they were completely covered by any patents we had. If they didn't want them, they didn't have to have them, but at least it was a convenient way of offering the license arrangement."

Even before June 1, 1956, WSI had never insisted on basing its royalty on the licensee's entire receipts from radioactivity well logging. It had consistently offered and granted licenses with narrow royalty bases from which expired or undesired patents were excluded, whenever a licensee so requested.

In 1953, it had granted to Perforating Guns Atlas a special license under four patents, under which a royalty of 1% was payable on gamma ray logging only, until expiration of the Bender patent which covered gamma ray well logging broadly, and a royalty of 2% was payable on neutron logging, which was covered by the other licensed patents (Ex. 502*, Agreement 38). In 1954, it had extended a similar license to B J Service, Inc. (Ex. 502, p. C-174).

The offers of special licenses included an offer to Petitioner, McCullough Tool Company, in December, 1954.

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* Second Book of Contracts, filed as part of the record.

With respect to this offer, Mr. I. J. McCullough, President of Petitioner, testified that Dr. Russell Otis, Vice-President of WSI and Lane-Wells, had told him that:

> "They had numerous royalty license arrangements, such as immunity, research and service, and *that they could even doctor up one to fit our special needs if that was necessary.*" (R. 534.)*

WSI's offer to license McCullough under individual patents was repeated in a letter to Mr. McCullough dated May 14, 1956 (R. 3223 to 3225). Neither offer was ever accepted.

Dr. Buck specifically testified that he knew of no instance in which WSI refused a request by a prospective licensee to pay royalty on a narrower base (R. 513).

It is significant that shortly after the Bender patent expired in 1955, WSI amended its standard license agreement forms to omit reference to the Bender patent, and voluntarily gave a royalty reduction to its licensees in the form of a lower royalty rate applicable to the same royalty base (R. 3206, 3111).

After June 1, 1956, WSI entered further special agreements. On November 1, 1956, it made a special neutron logging agreement with James M. Bird of Bradford, Pennsylvania (Ex. 502, Agreement 46). By this agreement, Bird was licensed under two Fearon neutron logging patents only, and agreed to pay a royalty of 5% of his gross charges for neutron logging operations only, provided that, after one of the two patents expired, the royalty was to be payable only on operations covered by the other.

In many cases, licensees who wanted special licenses under particular patents preferred, as a matter of con-

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* Emphasis is ours throughout this brief, unless otherwise indicated.

venience, to pay a lower royalty rate on their total logging charges, rather than segregate charges for operations covered by the particular patents. Thus, special agreements for licenses under varying numbers of patents were entered into at royalty rates of 3, 4, 5, and 10% of total logging charges (Ex. 502, Agreements 49, 51, 30A and 27).

Petitioner argues on page 17 that WSI did not carry out in good faith the offer it made on May 15, 1956 to Welex—one of its Research Service licensees—to terminate its existing agreements and negotiate a license on reasonable terms under any or all of its patents. Nothing could be further from the truth. WSI never refused to give Welex a license under individual patents with a royalty base excluding operations covered only by expired patents, but affirmatively offered to grant Welex such a license (R. 3060). What Welex wanted was to obtain a Research Service Agreement—that is, an agreement under which Welex would receive, in addition to a license under existing patents, the benefit of WSI's continuing research and know-how *throughout the radioactivity well logging field*—but to pay royalty on only a part of its operations in this field. This WSI was understandably unwilling to agree to. WSI's position is clearly stated in its letter to Welex, dated October 19, 1956 (R. 3072):

> "* * * If you wish a bare immunity, we should be glad to grant you immunity under any or all of our patents at a lower royalty rate, and royalty could be based upon patented operations only. However, while you are receiving the benefits of research in the entire field of radioactivity well surveying, we must base our royalty upon this field. Even in gamma ray logging you are receiving and will receive the benefits of the latest developments resulting from our research. We believe that competing companies cannot offer serv-

ices as good as yours without spending even more money on their own research and development."

The remainder of WSI's correspondence with Welex was in all respects consistent with the above offer (R. 3063). Petitioner's contentions with regard to Welex were exhaustively presented below, and were rejected as without merit by both the District Court and the Court of Appeals (App. 50a).

Petitioner also argues that agreements entered into before June 1, 1956, which contain terms found by the lower courts to constitute misuse, continued in effect after that date. The answer to this argument is that in May, 1956, as found by the District Court, WSI offered all its licensees the new forms of agreement, and alternatively offered to permit them to terminate their existing agreements and take licenses on reasonable terms under any or all of the WSI patents they desired (R. 3060, 3085, 3203). While two of the licensees did not accept WSI's offer prior to June 1, 1956, WSI kept the offer open and, before the end of the year, wrote each of these licensees a letter unilaterally confirming their right to make the instruments or acquire them from any source they saw fit (R. 3075, 3095).

The record fully supports the findings of the District Court which were affirmed by the Court of Appeals, that by June 1, 1956 WSI had "accomplished a complete purge of previously existing patent abuses," and that after this date "the extension of the royalty base to cover practice of expired patents was not coerced," but that licensees "were offered a real alternative by WSI's offer to grant a license under any individual patent or patents upon negotiated terms." (Findings 119, 122, above quoted.)

SUMMARY OF ARGUMENT.

Question 1. The decision below in no way conflicts with *Brulotte v. Thys Co.*, 379 U. S. 20.

In the instant case the "last of the patents" had not expired. Even after expiration of the Bender patent covering natural gamma ray logging broadly, there were many WSI patents available for use, and used, by WSI's licensees, including a number of patents normally used in natural gamma ray logging. Nor was there any "attempt" to "exact" royalties after expiration or to "extend * * * spent monopolies * * * into another term." WSI's use as a royalty base of the licensee's total receipts from radioactivity well logging—except where the licensee preferred to base royalty on the coverage of particular patents, terminating when the patent expired—was a matter of accounting convenience for both parties. The lower courts found, and the record shows, that at all times after June 1, 1956, WSI was willing to grant licenses under any individual patent or patents upon negotiated terms.

The decision below is well within this Court's holding in *Automatic Radio Co. v. Hazeltine*, 339 U. S. 827, and does not conflict with any decisions of this Court or any other court. It is correct in principle, as it should not be illegal for a licensor and a licensee, as a matter of mutual convenience, to agree voluntarily to base royalties on a licensee's total receipts from a general field, so long as there are a number of unexpired patents available for use, and used, and the licensor is willing to license individual patents for a negotiated royalty terminating when the individual patents expire.

Question 2. The question of purgation of misuse which Petitioner raises is a question of fact, and the record in this case amply sustains the concurrent findings of the two lower courts that WSI had purged its prior patent mis-

use by June 1, 1956, and that it was guilty of no misuse after that date.

Question 3. The concurrent decisions below that the Swift patent is infringed are clearly right and are not in conflict with 35 U. S. C. 112 or any decision of this Court.

The petition should be denied as to Question 3 since it is wholly abstract and is not presented by the facts of this case.

The lower courts held all of the Swift claims to be directly infringed by Petitioner's logging apparatus. Petitioner attempts to circumvent these concurrent findings and brings this case within *Gill v. Wells*, 22 Wall. 1, by arguing that an ingredient of their tool was not known as an equivalent of the corresponding ingredient of the Swift tool at the date of the Swift patent. This argument is bad on its face, since the Swift patent issued on May 29, 1951, whereas Petitioner's infringing apparatus was in commercial use in 1950 and therefore was "known as an equivalent" prior to the date of the Swift patent.

Petitioner also argues a modified form of its question, based on the date of the Swift *application* rather than the date of the patent. This is still contrary to the facts, since the equivalency of the radiation detectors used by Swift and the Petitioner was well known long prior to the date of the Swift application (F. 19, 30, 38; App. 72a, 76a, 79a).

The issue of "known equivalent" was raised in the trial court as to the Bender and Fearon patents, was decided adversely to Petitioner, and was abandoned by it. It was never raised in either of the courts below as to the Swift patent.

Finally, Petitioner argues that because it obtained a patent on an alleged improvement of a part of the Swift combination it can escape the charge of infringement. This

is directly contrary to the holding of this Court in *Temco v. Apco*, 273 U. S. 319, 328 and many other cases.

Question 4. In sustaining the validity of the Swift patent, the courts below applied the proper standard of invention as defined by the decisions of this Court.

The petition should be denied as to Question 4, since it, too, is abstract and not supported by the facts. The courts below held the Swift patent to be a new combination of old elements which produced a new and useful result of great value.

Petitioner quoted a portion of the opinion of the Appellate Court in an attempt to show that it ignored *A & P v. Supermarket*, 340 U. S. 147, and other decisions of this Court, but Petitioner fails to quote portions of said opinion appearing immediately before and after the quoted portion, which clearly show that the Appellate Court did follow the decision of this Court.

The evidence clearly supports the concurrent findings below which are entitled to great weight and should not be upset unless clearly erroneous. *Williams v. United Shoe*, 316 U. S. 364, 367.

ARGUMENT.

1. THE DECISION BELOW ON THE MISUSE ISSUES IN NO WAY CONFLICTS WITH THE DECISION OF THIS COURT IN BRULOTTE v. THYS OR WITH ANY OTHER DECISION, AND IT IS CLEARLY CORRECT.

Petitioner's principal argument for certiorari is based on an alleged conflict between the decision below and the decision of this Court in *Brulotte v. Thys Co.*, 379 U. S. 29. In *Brulotte*, decided November 16, 1964, this Court held:

> "That after expiration of the last of the patents incorporated in the machines, the grant of patent monopoly was spent, and that an attempt to project into another term by continuation of the licensing agreement is unenforceable."

The Court of Appeals in the instant case, after ordering a reargument addressed solely to the effect of *Brulotte*, held unanimously that *Brulotte* did not apply, and that the instant case was governed by this Court's decision in *Automatic Radio Co. v. Hazeltine*, 339 U. S. 827 (1950).

In its statement of Questions Presented, Petitioner attempts to create the impression that in the instant case the "last of the patents" had expired, and also that WSI's license agreements were an attempt to extend the monopoly of expired patents. There is no basis for either of Petitioner's contentions.

(a) In the instant case "the last of the patents" had not expired.

When the Bender patent expired in 1955, all of WSI's 70 or 75 other patents in the radioactivity well logging field were still unexpired. The great majority of them were still unexpired after the expiration of the Fearon neutron logging patent in 1960. The variety and coverage of the

remaining patents is indicated in the testimony of Dr. Buck, Vice-President and Technical Director of WSI (R. 511).

Petitioner, however, argues that, after the expiration of Bender in 1955, WSI had no more patents covering one particular method of radioactivity well logging—natural gamma ray logging. We doubt that this is determinative under *Brulotte*. As long as WSI had many unexpired patents available for use, and used, by its licensees in their logging operations, we doubt it is essential to the validity of its license agreements under *Brulotte* that it have patents covering every operation in its royalty base. In the present case, after the expiration of Bender, and after the expiration of Fearon, there were still a large number of patents available for use by the licensees, and it is unchallenged that many of them were in fact used in their operations and equipment.

However, if it be an issue whether, after the expiration of Bender, WSI still had unexpired patents used in natural gamma ray logging, the record—contrary to Petitioner's assertion—shows beyond peradventure that it did. While the patent covering natural gamma ray logging broadly had expired, the unexpired patents still covered various methods, combinations and equipment which were normally used in this type of logging. The facts in this regard are summarized by Dr. Buck in a letter to Welex dated May 14, 1957 (R. 3064):

> "* * * As you are no doubt aware, Gamma Ray logging as presently practiced involves a number of existing patents. For example, patents covering the following are usually involved—casing collar locator, scintillation counter equipment, surface power supply, etc. Tracer logging is regarded as an entirely separate field from natural Gamma Ray logging, and there are a number of patents and patent applications in this

field. The expired patents in these fields are, of course, free for anyone's use."

The above statement is substantiated and amplified by the testimony of Dr. Buck, on both direct and cross examination, of which some pertinent excerpts are printed as Annex A to this brief. There is nothing in the record in any way contradicting his testimony.

The record is therefore clear that after the expiration of Bender, WSI still had patents covering many features of natural Gamma Ray logging which were normally used by its licensees and others in such operations. Nor is there any basis for Petitioner's assertions that these patents were "unimportant." As a matter of fact, one of them was the important Swift patent here in suit.

With regard to patents on neutron logging after the expiration of Fearon, Petitioner never raised this issue on trial, and did not even attempt to prove that none of the patents then unexpired related to neutron logging. The fact, as is obvious from the patents themselves, is that a great many of them did.

Accordingly, we submit that, whether the matter be looked at from the standpoint of patents available for use in the equipment and operations of the licensees, or of patents actually used in their equipment and operations, or of patents relating to each particular type of logging, the "last of the patents" had not expired in the instant case.

(b) In the instant case there was no "attempt" to "exact" royalties after expiration.

In its decision in *Brulotte*, this Court found that the Thys contract was an attempt by that company to project its patent rights beyond their term. Mr. Justice Douglas termed such contract a "bald attempt to exact the same

terms and conditions for the period after the patents had expired." It is doubtless in view of this language that Petitioner makes the repeated assertion that WSI's license agreements were not drawn as field licenses for accounting convenience, but were "deliberately framed" or "intentionally designed" to "extend the spent monopolies of the Bender and Fearon patents into another term," and were arranged for this "express purpose."

There is no basis in the record for any of these assertions, which were rejected in substance by Finding 122 of the District Court. To summarize briefly the showing of the record:

(i) As early as 1953, WSI granted licenses under individual patents, with the royalty terminating when the patent expired, whenever the licensee requested such a license (page 12 above).

(ii) In 1954, as Mr. McCullough himself testified, WSI told him that: "They had numerous royalty license arrangements, such as immunity, research and service, and they could even doctor up one to fit our special needs if that was necessary" (page 13 above).

(iii) From the time the Bender patent expired in 1955, WSI omitted reference to the Bender patent in all new license agreements. It also voluntarily gave a royalty reduction to existing licensees (page 13 above).

(iv) Early in 1956, WSI, pursuant to resolutions of its Board, published in the Official Gazette of the U. S. Patent Office its offer to grant licenses under any one or more of its patents on reasonable terms, and wrote to all its existing licensees offering to allow them to terminate their existing agreements and take

licenses on reasonable terms under any or all WSI patents they desired (page 10 above).

(v) WSI repeated this offer many times in the ensuing years, and special license agreements—with narrower royalty base and royalty terminating as individual patents expired, if the licensee so requested—were entered into whenever a licensee preferred this alternative (page 13 above).

(vi) When the Fearon patent expired in 1960, WSI wrote letters to all its existing licensees, reiterating its willingness to renegotiate their licenses on a reasonable basis, when a patent expired or at any other time. (See, for example, R. 3044.)

(vii) We have already shown that, even after the expiration of Bender and Fearon, WSI (unlike the Thys Company) still had a large number of patents, used by licensees in all aspects of their logging operations, whose monopolies were not spent (pages 20 and 21 above).

(viii) Dr. Buck testified without contradiction that licenses were offered by WSI on a field basis for accounting convenience and because many licensees did not know exactly which patents they would want, but that no licensee had to take a license in this form (page 12 above).

The above facts demonstrate that there was no attempt by WSI to project the monopoly of any of its patents after their expiration. They confirm the conclusion that WSI's use as a royalty base of the licensee's total receipts from radioactivity well logging—except where the licensee preferred to base royalty on the coverage of particular patents, terminating when the patent expired—was a matter of

accounting convenience for both parties, and not, as Petitioner would have it, of sinister design. Within the meaning of *Brulotte*, it is clear that, in the present case, there was no "attempt" to "exact" royalties after expiration. The Court of Appeals expressly found this on reargument (App. 55a).

(c) The instant case is governed by Automatic Radio v. Hazeltine.

While, as above shown, the instant case does not fall within *Brulotte*, the lower courts correctly held that it falls under *Hazeltine*. The Court of Appeals stated in its opinion (App. 53a): "The facts in that case are almost identical with the facts in this case."

The holding of this Court in *Hazeltine* is well summarized in the following language, at 339 U. S. 834:

> "* * * We cannot say that payment of royalties according to an agreed percentage of the licensee's sales is unreasonable. Sound business judgment could indicate that such payment represents the most convenient method of fixing the business value of the privileges granted by the licensing agreement. We are not unmindful that convenience cannot justify an extension of the monopoly of the patents. * * * But as we have already indicated, there is in this royalty provision no inherent extension of the monopoly of the patent. Petitioner cannot complain because it must pay royalties whether it uses Hazeltine patents or not. What is acquired by the agreement into which it entered was the privilege to use any or all of the patents and developments as it desired to use them. If it chooses to use none of them, it has nevertheless contracted to pay for the privilege of using existing patents plus any developments resulting from respondent's continuous research. We hold

that in licensing the use of patents to one engaged in a related enterprise, it is not per se a misuse of patents to measure the consideration by a percentage of the licensee's sales.".

In his opinion in *Brulotte*, Mr. Justice Douglas distinguished *Hazeltine* as follows:

> "Automatic Radio Co. v. Hazeltine, 339 U. S. 827, is not in point. While some of the patents under that license apparently had expired, the royalties claimed were not for a period when all of them had expired. That license covered several hundred patents and the royalty was based on the licensee's sales, even when no patents were used. The Court held that the computation of royalty payments by that formula was a convenient and reasonable device."

Without laboring the point, each of the bases on which this Court in *Brulotte* distinguished *Hazeltine* is fully as applicable to the instant case.

Petitioner, however, asserts on page 23 that this case is "fundamentally distinguished" from *Hazeltine* by the alleged "fact" that WSI's licenses were "not adopted as a mere matter of business convenience" but were "deliberately framed to extend the spent monopolies of the Bender and Fearon patents into another term."

The short answer to this contention is that there is absolutely nothing in the record to support it. The facts from the record which fully answer it are set forth on pages 22 and 23 above. The record fully supports the finding of the District Court that licensees "were offered a real alternative by WSI's offer to grant a license under any individual patent or patents upon negotiated terms" (Finding 122, App. 109a). As long as WSI was willing to license individual patents on a negotiated reasonable basis, with royalty terminating as individual patents expire, it could not pos-

sibly have been guilty of a "deliberate effort" to extend any spent patent monopoly.

The uncontroverted showing of the record, as we have stated above, brings this case under *Hazeltine*. Like Hazeltine, WSI had a large number of patents, of which some would expire during the license term, leaving a great many unexpired patents available for use—and, at least in WSI's case, actually used in almost all aspects of the operations. Also like Hazeltine, in return for a percentage royalty on the licensee's total receipts, WSI gave the licensee the right to use any of the WSI patents it desired. As in *Hazeltine*, the arrangement was voluntary, and the record clearly shows that WSI was willing to license its patents on an individual basis whenever the licensee preferred to do so. Petitioner cannot distinguish the instant case from *Hazeltine*.

(d) The decision below does not conflict with any other decisions of this Court, or of the lower Federal courts.

Petitioner argues that the Court of Appeals decision conflicts with various other decisions—particularly with the decision of this Court in *Scott Paper Co. v. Marcalus*, 326 U. S. 249 (1945), and with the decision of the Third Circuit Court of Appeals in *American Securit Co. v. Shatterproof*, 268 F. 2d 769 (1959).

In the *Scott* case, this Court held that, when a patentee assigned his patent and was sued by his assignee for infringement, the fact that he had assigned the patent could not estop him from defending on the ground that the device he was manufacturing was a device shown in an expired patent and therefore within the public domain.

Scott was seeking absolutely to prohibit Marcalus from practicing the disclosure of an expired patent. Had

it succeeded, this would have deprived him of all opportunity to practice the invention.

These effects do not flow from the voluntary agreement of a licensor and a licensee to base royalties on the licensee's gross receipts, without attempting to exclude operations which are unpatented or on which the patents have expired. If the potential licensee wants to perform such operations without any payment, he can do so without taking any license of any kind. If he wants to take a license under other patents of the licensor which have not expired, and still perform such operations without any payment, he can request a royalty base which excludes such operations. Or if, as a matter of accounting convenience, he voluntarily agrees to make payment for his license under unexpired patents in the form of a royalty on his total sales, without separating out any operations uncovered by patents or on which the patent has expired, he may do so, and neither he nor the public is deprived of any right.

In the *Shatterproof* case, the patentee had consistently refused to fix a royalty for less than all of its patents. The principal holding of the Third Circuit Court of Appeals was that this was a refusal to license wanted patents unless the licensee would also take a license on unwanted patents, and was a misuse *per se*. However, Petitioner quotes on page 25 the following further paragraph of the court's opinion:

> "We conclude also, and quite apart from all of the foregoing the paragraph 8(a) of Securit's Standard Licensing Agreement which provides that the agreement shall continue 'in full force and effect to the expiration of the last to expire of any' of Securit's patents set out in 'Schedule A' constitutes a patent misuse for it extends the payment of royalties of patents under patents which may expire to the expira-

> tion date of that patent most recently granted to Securit. Indeed the expiration clause of the contract works an 'aggravating hardship' on licensees as Judge Leahy stated, in that it demands the renunciation of all patents, whether wanted or unwanted under the license."

The form of the expiration clause in WSI's Research Service agreement is similar to that quoted by the court. But, so far as the issue of royalty on an expired patent is concerned, both are indistinguishable from the expiration clause in the Hazeltine license. While the Hazeltine license extended for only ten years, the record showed that at least half the patents would expire before that period, so that it equally involved the payment of royalties on a broad royalty base including operations covered by expired patents. There is, however, one critical fact that, as held by the Court of Appeals in the instant case, distinguishes both *Hazeltine* and the instant case from *Shatterproof* on the issue of royalty on an expired patent. While in *Shatterproof* no other license was available, and the licensee, if he did not want the whole package, could get no license at all, in *Hazeltine* this Court regarded the package license as truly voluntary. Likewise, in the instant case all licensees were given the alternative of a package license or a license on reasonable terms under individual patents. In *Shatterproof,* the later payment of royalties on expired patents was coerced at the inception of the license. This was not true in *Hazeltine,* and is not true in the instant case.

That this critical fact was in the mind of the Third Circuit Court when it wrote the paragraph above quoted, is clearly shown by the last sentence of the quotation, in which the court notes the fact that, if the licensee tried to get out of the arrangement by cancelling the license, it would mean "the renunciation of all patents, whether wanted or unwanted under the license." This manifestly

refers to the licensor's unwillingness to license on any other basis than the package including expired patents—a fact not present in *Hazeltine* or in the instant case.

Shatterproof was properly distinguished on this basis by the Court of Appeals in the instant case, and by District Courts in *Carter Products v. Colgate-Palmolive Co.*, 164 F. Supp. 503 (D. C. Md., 1958) and in *Eversharp, Inc. v. Fisher*, 204 F. Supp. 649 (N. D. Ill., E. D., 1961). The same distinction also applies to *Technograph v. Bendix Aviation Corp.*, 218 F. Supp. 1 (D. C. Md., 1963), cited by Petitioner.

(e) The decision below is correct in principle.

When 50 or 100 closely related patents are being licensed, it is often burdensome for the parties, when trying to calculate royalty or verify royalty payments, to have to ascertain which, if any, of the patents have been employed in each of the licensee's operations. This difficulty is frequently avoided by the parties agreeing voluntarily to a royalty rate applicable to the licensee's total receipts from operations in the general field, in return for which the licensee is authorized to use any of the patents he wishes.

It is true that in many businesses "total receipts" include—as they did in *Hazeltine*—some operations which are unpatented, or on which patents have expired.* However, it should not be illegal for a licensor and licensee to agree as a matter of mutual convenience to base royalties on the licensee's total receipts from the field, as long as the "last of the patents" has not expired, and the broad base is adopted by voluntary agreement of the parties.

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* As we have pointed out, the record here does not show that the royalty base in the instant case included any significant operations on which all the patents had expired.

It is probably essential to legality that the patentee be willing, if a licensee so requests, to license individual patents for a negotiated royalty, terminating when the particular patent expires—as WSI was willing to do in the instant case.

This is what the Court of Appeals, following *Hazeltine*, held in the instant case, and we believe the decision is sound.

(f) The decision below is consistent with the rule that each patent must stand on its own footing.

Petitioner argues on page 29 that the decision below is in conflict with the rule of *U. S. v. Loews, Inc.*, 371 U. S. 38 (1962) and other cases that each patent and copyright must "stand on its own footing" and not on the "appeal which another * * * may have." In an effort to establish such conflict, Petitioner makes the following amazing assertion:

> "Even after these monopolies expired, respondent's package licensees, to obtain rights under the unexpired Swift patent, were obliged to accept the obligation to pay royalties on all operations within the 'radioactivity well surveying' field and hence under the spent Bender and Fearon monopolies."

This assertion has no support in the record and is entirely untrue. The fact is that any concern which wanted to obtain rights under the Swift patent and pay royalty on a narrow base could do so by taking advantage of the "real alternative" offered by "WSI's offer to grant a license under any individual patent or patents upon negotiated terms" (Finding 122, App. 109a). Dr. Buck, WSI's Vice-President and Technical Director, specifically testified that he knew of no instance in which a request to pay royalty on a narrower base was refused (R. 513).

If we were to go outside the record, as Petitioner does on page 41, we could point out that since 1960 WSI has indeed granted many licenses under Swift only, with royalty calculated on the basis of Swift only and terminating on expiration.

There is no conflict between the decisions below and the rule of *Loews*.

(g) Conclusion as to Petitioner's Question 1.

When we get to the essence of Petitioner's first question, it is evident that what Petitioner is seeking is a reconsideration of *Hazeltine*. We believe that *Hazeltine* is sound law, and that its boundaries were established with reasonable clarity by this Court in its recent decision in *Brulotte*. The instant case falls well within the rule of *Hazeltine*, and clearly outside *Brulotte* and all other pertinent decisions, and we believe it was rightly decided. We submit there is no reason why this Court should grant certiorari to consider Petitioner's first question.

2. THE RECORD CLEARLY SUPPORTS THE HOLDING OF THE LOWER COURTS THAT WSI HAD PURGED ANY PATENT MISUSE BY JUNE 1, 1956.

Petitioner argues, under its second question, that the finding of the lower courts that WSI had purged the preexisting patent misuse by June 1, 1956, is in conflict with the decision of this Court in *B. B. Chemical Co. v. Ellis*, 314 U. S. 495 (1942), and with the decision of the Sixth Circuit in *Preformed Line Products Co. v. Fanner*, 328 F. 2d 265 (1964).

In *B. B. Chemical*, this Court held that a patentee could not purge misuse by merely offering in this Court during the appeal to grant licenses to others, but that it was necessary that he show that he had actually abandoned

his illegal practices and that any consequences of such practices had been fully dissipated. In *Fanner*, the Sixth Circuit *affirmed* a judgment finding purgation on the authority of *B. B. Chemical*, adding at page 279:

> "These issues present questions of fact. * * * Whether a purge had been effected under the facts of a given case is largely discretionary with the trial court."

The decision of the lower courts herein is entirely consistent with *B. B. Chemical* and *Fanner*. What is required to dissipate the consequences of a particular patent misuse obviously depends on the particular facts. Here the District Court found that WSI between 1951 and 1956 had misused its patents in two respects. One was that the language of the 1951 agreement with Lane-Wells had precluded it from granting licenses to others except in the two approved forms, without Lane-Wells' consent—this even though the record showed that Lane-Wells had consented to several special licenses and had never refused its consent. The District Court held—and we do not see how it could have held otherwise—that this misuse was purged, and its consequences dissipated, by the termination of the agreement requiring Lane-Wells consent, by the adoption by WSI of its new policy of licensing all comers on a reasonable basis under any or all of its patents, and by its offers to all existing licensees to terminate their license agreements to permit the negotiations of new agreements under reasonable terms.

The second misuse found by the District Court was that the 1951 agreement did not expressly give Research Service licensees a license under WSI patents to make their own instruments or have them made by others. The District Court held that WSI had purged this misuse prior to June 1, 1956 by amending its Research Service agree-

ments to permit the licensee to manufacture instruments or procure them elsewhere, and by its tender of such amendments to all existing licensees. Again, we do not see how the District Court could have held otherwise, particularly in view of the fact that the record clearly showed, and the District Court also found, that by June 1, 1956, WSI was no longer dominant in the market for the sales of instruments and apparatus for radioactivity well logging (Finding 117, App. 107a)—so that it was perfectly practicable for a licensee to procure instruments elsewhere if it did not wish to purchase them from WSI, or to manufacture them itself as did many other companies, large and small.

While Petitioner argues that the effects of misuse were not dissipated because two of the research service licensees did not accept the amendments before June 1, 1956, the fact as previously shown is that the offer was made in good faith prior to that date, and that WSI at all times kept the offer open and, before the end of the year, wrote each of these licensees a letter unilaterally confirming their right to make the instruments or to acquire them from any outside source (see page 15 above and R. 3075, 3095).

We submit that the District Court correctly held that WSI had completed its purge by June 1, 1956 (Finding 119, Conclusions 24, 25, App. 108a, 117a) and that there was no misuse after that date, and that the Court of Appeals correctly held that McCullough's attack on the finding of purgation "is not borne out by the record" (App. 50a).

We further submit that there is no reason why this Court should take jurisdiction to review the concurrent finding of the two lower courts on the issue of purgation, which the applicable decisions have held to be an issue of fact.

3. THE CONCURRENT DECISIONS BELOW THAT THE SWIFT PATENT IS INFRINGED ARE CLEARLY RIGHT, AND ARE NOT IN CONFLICT WITH 35 U. S. C. 112 OR ANY DECISION OF THIS COURT.

Both the Trial Court and the Court of Appeals found that Petitioner's well logging apparatus is structurally and functionally substantially the same as that shown in the Swift patent, that each and every element of each of the Swift claims is employed in Petitioner's apparatus in the same way as disclosed by Swift to achieve the same result, and that there is direct and literal infringement of the Swift patent. (App. 37a-39a; 88a-89a.)

Petitioner here, for the first time, attacks these findings of infringement on the ground that Petitioner's infringing apparatus contains an ingredient allegedly "not known" at the time of the Swift patent. In order to induce this Court to review the concurrent findings below, Petitioner, in complete disregard of said findings, has fashioned a purely abstract question not based upon any issue in this case, as follows:

> "3. Does the third paragraph of 35 U. S. C. 112 change the pre-existing law by expanding the scope of equivalents of an ingredient of a claim for a combination of old elements to include ingredients not known at the date of the patent but actually invented thereafter?"

As a presumed answer to this spurious question, Petitioner quotes from the case of *Gill v. Wells* to the effect that if a defendant substitutes into a plaintiff's patented combination of old elements an equivalent which was "not known at the date of the patent as a proper substitute for the omitted ingredient," there is no infringement. On the assumption that this was the law at the time of the 1952 Patent Act, Petitioner then proceeds to argue that the

decisions of the lower courts in this case were in error, because Petitioner substituted into the patented Swift combination an ingredient not known at the date of the Swift patent. This argument has no basis in fact.

The alleged rule of "known equivalents" as set forth in *Gill v. Wells* and Petitioner's Question 3, clearly states that the substituted equivalent must be known "at the date of plaintiff's patent." Hence, Petitioner's Question and argument in support thereof are both irrelevant, since the date of the Swift patent is May 29, 1951, whereas Petitioner's infringing apparatus was in commercial use in 1950 (F. 14, 61; App. 69a, 88a), and was therefore "known" prior to the date of the Swift patent. Clearly then, the question as stated does not fit the facts.

Recognizing that the facts do not support its Question 3 as stated, Petitioner by implication re-states the question in modified form by reference on page 36 of its petition to the *date* of the Swift *application*. By so doing, Petitioner, of course, puts itself completely outside the alleged rule of *Gill v. Wells* which is predicated upon the *date of the patent*.

While we are uncertain as to the purpose of this tactic, it is immaterial to the question at hand, since the allegedly new ingredient in the logging tool of Petitioner was the inclusion therein of a known scintillation counter radiation detector for the radiation detector disclosed in the Swift patent. Findings 19 and 38 (App. 72a, 79a) and the Appellate Court decision (App. 32a) clearly set forth the equivalency of scintillation counters, Geiger counters and ionization chambers as radiation detectors for radioactivity well logging, and Finding 30 (App. 76a) establishes that this equivalency was well known at least as early as 1938, long prior to the 1946 filing date of the Swift application.

Thus, Petitioner's question, even as modified, fails to fit the facts of this case.

The issue of "known equivalents" was never raised by Petitioner in either the Trial Court or the Appellate Court as to the Swift patent, and hence is improperly raised for the first time in this Court. The issue *was* raised in the Trial Court as to the Bender and Fearon patents, and was disposed of in Finding 30 (App. 76a) as follows:

> "30. Prior to the date of the original Bender patent No. 2,133,776 (October 18, 1938), scintillation counters were known to be the equivalent of Geiger counters as radiation detectors for the detection of gamma rays by converting incident gamma rays into corresponding electric signals, which can then be measured as an indication of gamma ray intensity * * *."

The issue was not pursued in the Court of Appeals and hence stands abandoned, even as to the Bender and Fearon patents.

While the foregoing disposes of the issue *as stated* (and as modified), in view of the fact that Petitioner speaks interchangeably in terms of "ingredients," "elements," and "tool," Petitioner apparently contends that since Pringle obtained a patent for his alleged improvement of a part of the Swift tool, Petitioner should escape infringement. Such a contention, of course, clearly violates the basic patent laws as they have always been, and as they were so well stated by this Court in *Temco v. Apco,* 275 U. S. 319, 328 (1928), as follows:

> "It is well established that an improver cannot appropriate the basic patent of another and that the improver without a license is an infringer and may be sued as such. *Cochrane v. Deener,* 94 U. S. 780, 787 * * *."

In the *Temco* case, as here, the infringing defendant sought to escape liability on the theory that he himself had a patent on what he claimed to be an improved version of plaintiff's device. This, of course, was not then the law, nor is it now the law.

We submit that certiorari should be denied as to Petitioner's Question 3, since the question is purely abstract and fanciful, is not supported by any of the facts in this case, and was never raised by Petitioner in either of the courts below as to the Swift patent.

4. IN SUSTAINING THE VALIDITY OF THE SWIFT PATENT, THE COURTS BELOW APPLIED THE PROPER STANDARD OF INVENTION AS DEFINED BY THE DECISIONS OF THIS COURT.

Here again we find the Petitioner fashioning an abstract question which has no foundation in the record of this case. With a complete disregard of the facts, Petitioner poses its final question to this Court as follows:

> "4. Does the constitutional standard of invention permit a construction of 35 U. S. C. 103 which would impart patentability to claims for a combination of old elements where the whole does not in some way exceed the sum of its parts?"

This question infers, and Petitioner's Point 4 argues, that both the Trial Court and the Court of Appeals in this case ignored the Constitution and the mandates of this Court, in finding that the Swift patent is *not* a mere aggregation of an old casing collar locator and an old surveying tool as Petitioner asserts, but is in fact a true *combination* of active structural and electrical elements, which produces a new and useful result of great value to the well logging industry. (F. 57; App. 86a; App. 17a.)

On pages 40 and 41 of the Petition, we are told that the courts of the various circuits have aligned themselves into opposing groups, one of which follows the mandates of this Court and the other of which *disregards* the mandates of this Court. In an attempt to support their bald assertion that the Tenth Circuit Court of Appeals "has now placed itself in this latter category," Petitioner quotes the second half only of a paragraph from the Court of Appeals' decision appearing on page 16a of the Appendix, which, we assume, is supposed to show that the Tenth Circuit has renounced the *A & P* case and similar decisions of this Court. However, Petitioner conveniently omits the first portion of the quoted paragraph of said decision, which reads as follows:

> "It is universally held that a mere aggregation of a number of old parts or elements which in the aggregation perform or produce no new or different function or operation than previously performed or produced by them is not a patentable invention. *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147 * * *."

Hence, far from renouncing the *A&P* case, the Court of Appeals in this instance has specifically adopted the rule as contended for by Petitioner. Further, Petitioner ignores the next paragraph of said decision on page 17a of the Appendix, where the court said:

> "We think the Swift patent is a combination, rather than an aggregation, of old elements. The record sustains the trial court's factual determination that Swift is a new combination of old elements that produces a new and useful result and was not obvious to one skilled in the art. The log produced by the Swift method and apparatus is not only different from, and more accurate than, a radiation log, but it also utilizes a casing collar to record depth measurements

simultaneously with the recording of radiation formation signals. This is a result that no prior invention had ever reached."

The foregoing statement by the Court of Appeals is fully supported by the findings of the Trial Court appearing at pages 85a to 90a of the Appendix, and those findings are fully supported by the evidence. Thus, irrespective of whether or not 35 U. S. C. 103 modifies the rule of the *A&P* case, it is evident that under the facts of the present case, the Swift patent is valid.

The Petitioner cites no finding as clearly erroneous, yet in order to find the Swift patent invalid, this Court would have to review the voluminous evidence in this case and set aside the concurrent finding of the Courts below. We submit that such a review of purely factual issues would be improper under the rules and decisions of this Court. As said in *Williams Manufacturing Co. v. United Shoe Machinery Corp.*, 316 U. S. 364, at 367:

"* * * These findings are to the effect that the new combinations, while they involve old mechanical construction, combine these in a new way so as to produce an improved result. These are findings of fact, despite the petitioners' apparent contention to the contrary, and we will not disturb such concurrent findings where, as here, there is evidence to support them. The claim that the combinations are merely of old elements, which perform no new function and produce no new result, must be overruled."

We submit that this Court should decline to grant certiorari as to Petitioner's Question 4, since the findings of the Trial Court and the decision of the Appellate Court clearly demonstrate that these courts carefully and painstakingly considered all of the evidence in this case, applied the correct standards of invention to said evidence,

and correctly decided that the Swift patent does in fact claim a patentable combination in which the whole exceeds the sum of its parts.

CONCLUSION.

For the foregoing reasons, it is respectfully submitted that this petition for a writ of certiorari should be denied.

Respectfully submitted,

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ANNEX A.

Excerpt from testimony of Dr. John F. Buck as to WSI patents on natural gamma ray logging remaining unexpired after Bender.

Dr. Buck testified as follows on direct examination (R. 511):

"Q. After the Bender reissue expired in October, 1955, Well Surveys had no patent on gamma ray logging as such, did it?

"A. Not on gamma ray itself as such, but on some of the equipment used in gamma ray logging it did.

"Q. Now—

"The Court: Do you mean on natural gamma ray?

"The Witness: Natural gamma ray.

"Mr. Day: Natural gamma ray, that's right, Your Honor.

"Q. (By Mr. Day) Did Well Surveys have some patents you say on methods or equipment that would normally be used in gamma ray logging?

"A. Certainly, that were normally being used by their licensees, they did.

"Q. What were some of those?

"A. The ionization chamber method, for example, those licensees who were still using the ionization chamber—and most of them were at that time. There were probably a half a dozen patents on the ionization chamber equipment. I have already mentioned some of them such as the form of the ionization chamber, the mounting, the insulation, the methods of balancing it out, methods of running power down to the chamber, methods of running two chambers simultaneously, and that sort of thing.

"Q. Supposing a licensee was not using an ionization chamber but a Geiger counter, or a scintillation chamber to do this natural gamma ray logging, would any of the patents normally be used in those operations?

"A. Well, normally if you are running in casing you would be running a casing collar locator and we had a patent on the casing collar locator, that would cover if they were running gamma rays with the casing collar locator. I believe all of our licensees were also using a patent on recorders—or not on recorders, but on the type of recorder pen that we use, which allowed the logs to be run simultaneously, as the pens would pass over each other, so they could be adjusted easily in the field, and so on. We had a patent on that. I think all of the licensees were using those particular patents—that were using those, whether they were running gamma rays, or whatever—

"Q. Were any of the Schlumberger patents under which you had licensing rights that a licensee would normally use if he were doing natural gamma ray logging?

"A. I believe there is a Schlumberger patent that covers the putting of power down the cable and the resulting signal, by the same cable, which was always being used by our licensees. I believe that is a Schlumberger patent. That is one I can think of, off hand. In the scintillation counter equipment—gamma ray equipment—I believe there is a Schlumberger patent, but that covers the use of the temperature* controlling method, use of vacuum glass, or something like that. There were other Schlumberger patents but I don't think of any offhand.

"Q. You mentioned, used by licensees of certain of these patents; would other companies in the business, other than your licensees, normally be using casing collar locators?

"A. Normally, yes, sir.

"Q. And would they normally use, or might they use this signal down the conductor cable that you have referred to?

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* The word "chamber" appearing in the transcript is an error.

"A. Yes, they normally would; most of them used surface power."

Dr. Buck gave the same testimony on cross examination (R. 516). There is nothing in the record in any way contradicting his testimony.